The Builder.

No. CCCCL.

SATURDAY, SEPTEMBER 20, 1851.

AMONGST the day's excursions from Brighton which the rail has opened up, CHICHESTER should hold the first place. Strange to say, however, comparatively few of the visitors to Brighton find their way there, but are contented to traverse eternally on horse, on foot, or on wheels, the East and West Cliff of that elegant and healthful watering-place, with an occasional walk on the pier, a scamper over the swelling Downs, and one visit to the "Dyke,"—of course called the "Devil's" in early times, when it was the custom to attribute to the fiend's agency whatever people were unable to account for in a simpler manner. Any large stone on a plain far remote from its quarry was usually dropped there by the bad spirit; and any extraordinary markings in a rock shewed where his hoof or claws had been. Does he leave fewer marks in these days? Let us hope so, though it be not our business.

The cathedral is the principal object of interest at Chichester, but there are besides, the market cross, the walls, and the town itself, for those who can see. The Cross, a large octagonal structure, built towards the end of the fifteenth century, with central pillar, flying buttresses, niches, and pinnacles, is in a miserable state of decay, and has awakened the attention of the local archæologists to the necessity of some steps for its preservation. It serves now as the public time-teller, showing on four of its sides the dials of a clock, given by Dame Elizabeth Farrington, in 1726, "as an hourly memento of her goodwill to this city." Some repairs were made in 1746, says a second tablet, and badly enough these were done, as the briefest view will show. The cross is placed at the intersection of the principal streets, and comes in picturesquely from all sides.

The stone of which the cathedral is built is much sounder than that of the cross, although some of it is 300 years older, having been put up at the commencement of the twelfth century. We do not intend to trace the history of the cathedral: those who visit it will do well to obtain a sensible little "Guide" to it, written by one of the vergers, Charles Crocker, a local poet, who, according to his own story, was pulled out of the lowest rank of society into a respectable position by a small volume of poems which he contrived to write.* Suffice it to say, that the structure is Norman. Being fired in 1187, it was restored with Early English additions, and presents therefore some appearances internally, which would seem curious without knowledge of this fact. The nave has much dignity, and the presbytery very great elegance and beauty, especially the Early English triforum at the east end, with its sculptured figures, and the clusters of purbeck marble columns below. In the Norman nave, we should mention, purbeck marble columns were introduced after the fire, at the angles of the piers of the main arcade and elsewhere, and serve to connect the whole, in an interesting manner.

The cathedral has the peculiarity of double aisles on each side, which give a beautiful intricacy and play of light and shade, and it has stone groined vaultings, which are early examples. The Norman arches at the *crux* which carry the tower and spire are lofty and very fine: above, some small pointed openings show where the later work commenced. The width of the transept is included in the choir. The wood fittings of the choir are ugly and unsuitable, and will, we hope, soon give place to better. The south transept contains two curious paintings, executed by one Theodore Bernardi, in 1519, and a series of portraits of kings of England. The Consistory Court, communicating with a small room over the south porch, used once as a place of security, if not as a prison, should be viewed. The south porch itself is a pretty specimen of Early English work. In the south aisle of the choir there are two pieces of ancient sculpture, representing, rudely, Mary and Martha before the Saviour, and what may be the Raising of Lazarus.* In the first-named, the castle in the back ground has a number of low pyramidal roofs, covered with scales, such as are represented in many early Norman MSS. So, too, the iron-work on the door, which stands open. There is an ancient wrought-iron gate to the choir, simple and effective, and everywhere, indeed, are scattered evidences of ancient taste and skill to arrest the observer and make him think.

The Lady Chapel is of considerable length (the length of the whole building, by the way, is called 411 feet), and is of the decorated period, but early in it.† Notice here the carved capitals which carry the groined vaulting, and are very good.

Amongst the old tombs may be specially mentioned Bishop Shurborne's effigy, of alabaster, in the south aisle of the choir; the coped tomb of Bishop Radulphus, the founder of the Cathedral, near the Lady Chapel; the shrine of St. Richard in the south transept, and the tomb of Richard Fitzalan and his Countess, on the north side of the nave. The latter two have been restored by Mr. E. Richardson, and were mentioned by us at the time. A modern altar tomb, with canopy, by the same sculptor, to John Smith, Esq., of Dale Park, is scarcely so well cut as we should have expected. There is an exquisite mural monument on the south side of the nave, by Flaxman, in memory of the daughter of Captain Cromwell (1797). The political economist will look with interest on the statue of the unfortunate Huskisson, by Carew, and the lover of poetry will seek out the tomb,—

> "Where COLLINS, hapless name,
> Solicits kindness with a double claim."

Over the entrance to a modern vault formed for the Duke of Richmond's family is written, *Domus Ultima*. Some of our readers will remember Dr. Clarke's epigram on this:—

> "Did he who thus inscribed this wall,
> Not read, or not believe, Saint Paul,
> Who says there is, where'er it stands,
> *Another house*, not built with hands?
> Or may we gather from these words
> That house is not a—House of Lords?"

The gradual restoration of this cathedral, fortunately commenced in time, has been going on for several years past, and is still proceeding under the direction of Mr. Butler, a local architect. The purbeck marble columns, we observed, are being repaired with what seemed a composition of pounded marble, bees' wax, resin, &c., which is shaped with a hot iron, and takes a polish similar to the stone itself.

Many of the windows have been filled with stained glass. The windows at the west end have been successfully executed by Mr. Wailes,* who has also put up several at the east end with more or less success. Mr. Willement has executed a painful imitation of Early English glass in the north aisle of the presbytery, and Mr. O'Connor a memorial window to Sir Thomas Reynell (1848), which, although meritorious in some respects, is somewhat coarse and heavy. A very difficult art is this same glass-painting: if our artists did right they would never allow themselves to be persuaded to meet circumstances, by putting up anything less good than the *best they can do*.

Externally the tower and spire (beautifully placed) remind you of Salisbury, and the observer will find many beautiful bits as he wanders round the building. The bell-tower, an erection of the Perpendicular period, stands at a short distance from the north side of the nave (the stone is in a bad taste), and then there are the cloisters, on the south, which enclose three sides of an area called Paradise (whence "*parvise*"), and have an effective wooden roof of simple construction.

We must back, however, to Brighton, if it be but for the purpose of suggesting to the authorities there, some attention to the adornment of their town. The absence of art in Brighton is very noticeable and lamentable: scarcely a statue, or a vase, or a decoration is to be found. There is a *fountain*, it is true, and a pretty specimen it is.

The purchase of that costly folly of George IV., the Pavilion, was a wise step on the part of the town. The Banqueting Hall with its dragons, the Music-room with its eagles and glittering ceiling of gilded shells, have been fitted up for public entertainments, and excite wonder, if not admiration. The gardens seem to want a man of knowledge and taste to change their aspect from what is now too much like "Vauxhall in the day-time;" and for the town generally, with a view to the future, we would suggest the appointment of a committee of adornment. With 60,000 inhabitants and three miles of houses next the sea, Brighton has no excuse for standing still.

MINERAL PRODUCTS IN CLASS I. OF THE GREAT EXHIBITION WHICH RELATE TO THE BUILDING ARTS.

BUILDING STONES OF CORNWALL AND DEVON.

AMONG the most valuable and important of our building materials are the granites of Cornwall and Devon, with their associated rocks of porphyry, trap, and serpentine. Although there are minute differences of composition in the various masses of granite which form the great "tors" and elevated plateaux of Devon and Cornwall, some being distinguished by distinct imbedded crystals of felspar, and assuming in consequence a porphyritic structure, others possessing the three principal ingredients of granite—quartz, felspar, and mica—

* The history of the building, nevertheless, deserves, and should have, more complete investigation than has yet been given to it.

* Some of the parts of this have been misplaced.

† The Lady Chapel is now used as a library. In a case here, are relics of an early date discovered in the tombs of two bishops, necessarily exhumed during some alterations.

* The upper windows here were filled in this way. The present dean held formerly the rectory of Marylebone, and on quitting it a sum of money was subscribed by his parishioners to present to him a testimonial of their respect, and at the dean's own suggestion, we believe, was applied in the production of the glass for this window.

mixed in a more crystalline and uniform manner, and others again with a large proportion of their alkaline constituents more or less decomposed, yet there can be no doubt that all the great granitic protuberances from Dartmoor to the Lands End belong to one common geological formation, and are probably of nearly the same geological age.

It may be observed of these masses that the granite of Dartmoor is the most crystalline in its structure, has the finest grain, and is most uniform in its colour. As we proceed westward the granite usually contains more distinct crystals of felspar, which crystals become largest and most varied in colour in the extreme west of Cornwall. This appearance of distinct crystallization in the felspar is supposed to have arisen from an inferior degree of heat in the molten mass of the granite when first protruded, the effect of this inferior heat and consequent fluidity being that the felspar crystallized before the other ingredients, which were afterwards consolidated around the first-formed crystals of felspar. Besides this difference in the original consolidation of the granite, there is another way in which porphyritic granites have been largely produced. It is supposed that the original masses have cracked during the process of cooling, and that the yet fluid igneous matter from beneath has been injected into the cracks or fissures so formed, and has caused those remarkable formations called elvan dykes. These dykes vary in width from a few inches to several hundred feet, and may frequently be traced for many miles in length. It appears that the material injected into the dykes has commonly been at a lower temperature than the adjacent granite, and that although the centre of the dyke may be perfectly crystalline, and not distinguishable from the neighbouring granite, yet the sides of the dyke very frequently exhibit a distinct porphyritic structure, owing, as in the former case, to the crystallization of the felspar before the quartz and mica assumed the solid form.

In some of the granite which is very decomposable, the crystals of felspar are detached from the other ingredients, and can be readily picked out, showing an example of extremely rapid cooling. Specimens of this kind from Lundy Island, may be seen in the Museum of Economic Geology.

The true granite of Cornwall and Devon is always a compound of three or more minerals, adhering together by simple aggregation, and without any cementing substance between them. They all, as far as I have observed, contain the usual triple compound of quartz, felspar, and mica,—the felspar being usually much in excess of the other ingredients, and furnishing generally the most prominent and distinguishing character of the rock, the quartz next in quantity, and the mica last in importance. The felspar is to be readily distinguished by the size and opaqueness of its crystals: the quartz has usually a transparent, lustrous appearance, not exhibiting geometrical figures of crystallization like the felspar; while the mica is usually soft, whitish, and shining, and can be separated into flakes or minute plates with a knife. The relative hardness of the three may be expressed by saying that the mica may be cut by a knife, the felspar can be scratched only, and the quartz will effectually resist all attempts either to cut or scratch it. Besides these ordinary ingredients of granite, this rock in Cornwall and Devon usually contains schorl, a brownish black and fibrous mineral, which can also be separated into plates like mica, and which occurs chiefly in the outside portions of the granite masses, and is not so common in the central parts. The structure of porphyritic granite has been already explained. It does not differ from that of granite itself, except in having large imbedded crystals, which have cooled before the general mass, and may be described as crystals imbedded in a finer kind of granite. The true porphyries of the West of England are different from this, inasmuch as they have a distinct basis, in which crystals or fragments of other rocks are imbedded. This basis is not the result of crystallization, but of mere mechanical aggregation. Thus we have quartz porphyry, and felspar porphyry, both named from the imbedded minerals, the former usually consisting of a basis of decomposed felspar, enclosing quartz, and the latter of some other basis enclosing felspar. In many porphyries the basis encloses crystals both of quartz and felspar, the variety and shapes of which give rise to many of its most beautiful forms. Chalcedony and agate also occur in porphyry, and much modify its appearance. The crystals are said to be always of contemporaneous origin with the base, and are not mechanically mixed, like the constituents of sandstone rocks.

The serpentine of the Lizard and other parts of Cornwall is a very beautiful rock, the prevailing colour of which is green, but this is veined by cloudy streaks of black, yellow, and red. The chief constituent parts of serpentine are silica, varying in different places and by different analyses from 32 to 45 per cent.; magnesia, 23 to 37 per cent.; lime, 0 to 11 per cent.; alumine, 0 to 18 per cent.; and volatile matter and carbonic acid, 0 to 14 per cent. It is moderately soft, and can be worked and turned in a lathe. It takes a beautiful polish, and is a highly ornamental stone, being extensively fabricated into vases, columns, pedestals, chimney-pieces, &c. Serpentine ranks as one of the primitive rocks, and in Cornwall is protruded through the granite and older stratified rocks, which it overflows and rests upon.

The granite of De Lank Moor, and that from Hey Tor (see No. 190, Class 1) are favourable specimens of the Devonshire granite, and are especially well known in London. The quarries of Hey Tor are about four miles north of Ashburton, on the eastern border of Dartmoor Forest. They are connected with the Teigngrace canal by a tramroad eight miles in length, formed of granite blocks. The canal passes down to Newton Bushel, where it joins the river Teign and communicates with the sea and with the South Devon Railway. The Hey Tor granite was used in the construction of London-bridge, Fishmongers'-hall, Tothill-fields Prison, the pillars of the gates of Christ's Hospital, and for the columns of George the Fourth's library, in the British Museum.

There are also extensive quarries on the western side of Dartmoor, at Foggintor, from which place the stone is brought down to Plymouth by a railway 25 miles in length (see No. 160, class 1). The mode of working this quarry was exceedingly well described a few years ago by Mr. William Johnson, in a paper read before the British Association. He describes the quarry as situate about 350 or 400 feet below the summit of the mountain. The quarry was first opened by means of a gullet, which was driven horizontally until an upright face of rock 50 feet high was reached: this face presented beds of beautiful stone 8 and 10 feet in thickness. The gullet has since been much extended, and the sides cleared away, till the floor of the quarry presented in 1841 a cleared open surface of 4,000 square yards. On both sides, and beyond this cleared space, the quarry is further worked by benchings, having an area of about 2,600 square yards, the highest bench being 80 feet above the rails on the floor of the quarry. Blocks weighing 20 tons, containing about 250 cubic feet, have been frequently sent out of this quarry, and it is not uncommon for one shot in blasting to detach and loosen 3,000 tons of stone. The author describes the Foggintor granite as the best in this country for steps, plinths, strings, blocking courses, ashlars, pedestals, obelisks, columns, cornices, and indeed for all other purposes of architecture. It is also very peculiarly fitted for the massive works of hydraulic engineering, as in docks and harbours, on account of the great sizes in which the blocks may be procured. Hence it has been very extensively used for copings and mooring posts, also for the hollow quoins and projecting quoins of dock and lock gates, for the altars or retreating benches of graving docks, as well as for the heaviest and most massive parts of bridges and other engineering works. The works at the Devonport Dockyard, those of the magnificent new graving-dock at Woolwich, Tenby Beacon in Pembrokshire, the Neale memorial in the New Forest, Hants, the Nelson column, and the retaining walls in Trafalgar-square, and the new buildings of the Sun and Alliance Fire Office all furnish examples of the Foggintor granite.

Besides the varieties of Devonian granite already mentioned, the Exhibition is rich in specimens of Cornish granite, a few of which I proceed to mention. The district around Truro (No. 164) sends several varieties of granite, besides a great many porphyries from the numerous dykes in the neighbourhood. These have been marked and arranged with much care, and their value pointed out as building stones, materials for road-making, &c. In No. 169 are several specimens of red porphyritic granite and porphyritic elvans from the neighbourhood of Launceston, Cheesewring, and Landreyne North. In the district of St. Austell much of the granite is in a very decomposing state, the felspar being frequently converted into *kaolin;* and the St. Austell committee (No. 166) have sent up a specimen of soft granite, which may be described as a very light-coloured stone, with the felspar in an amorphous, uncrystallised state, the quartz very light-coloured and diaphanous, the mica white, and in very small plates. The blue granite from Roche, also sent by the St. Austell committee, deserves notice. The felspar here is very indistinctly crystallised, the quartz very crystalline and translucent. In No. 160 we have several specimens from the neighbourhood of Penryn and other places in the granite district which lies on the west side of Falmouth. In all these specimens the felspar is in more distinct and better defined crystals than in the Dartmoor granite. The Penryn stone, as well as that from the Constantine quarries, on the opposite side of this granite district, stands in high repute amongst engineers and architects, and one or other of them has been used in Waterloo-bridge, at the dockyards of Deptford, Woolwich, Chatham, Portsmouth, steam-basin at Keyham, British Museum, Royal Exchange, Phœnix Fire Office, and many other important buildings. The collection, No. 160, which is very extensive, and is contributed by Messrs. W. and S. Freeman, also comprises specimens from the most remote mass of granite which this country contains; namely, that which occupies the Lands End in the extreme western part of Cornwall. Amongst these are blocks from Mosemonan Quarry, from Lamorna Quarry, near Penzance, and from Zemor Quarry, St. Ives, the shipping port for all these being Penzance. In these granites, as before observed, the felspar crystals are very large, frequently measuring 6 or 8 inches in length by 2 or 3 inches in breadth. These granites have been employed in her Majesty's dockyards at Deptford, Woolwich, Chatham, and Portsmouth, the steam-basin at Keyham, Dover Pier, and Hull Docks. Messrs. Freeman also exhibit outside the building specimens to show the size of the blocks which may be procured from the Penryn and Penzance granite, namely, an obelisk in one piece from Lamorna quarry, 24 feet 4 inches in height, and weighing 21 tons; also the base of this obelisk from Carnsew, near Penryn, weighing 31 tons. This collection comprises some beautiful varieties of greenstone porphyry, especially one called *polyphant stone*, from Lewannick Quarry, Launceston, Cornwall. This stone takes a highly ornamental polish, and was used in Lewannick Church, Launceston Castle, Alternum Church, &c.

In No. 159 are several specimens of fine grained porphyry, among which is a white variety of great beauty, which would be suitable for building purposes. No. 141 contains some highly ornamental slabs of porphyry with polished faces, the area of each being about 15 square feet. One of these is a specimen from Retire-in-Withiel, Cornwall, with a greyish cream-coloured ground, containing imbedded crystals of white felspar, crystalline quartz, and black schorl: two other specimens from the same place have a flesh-coloured reddish ground, with white felspar crystals of all sizes, up to 2 inches by 3-4ths of an inch, in some places speckled with black schorl of all sizes up to the diameter of a six-

pence. Another specimen is from Luxulyan, Cornwall, having a black ground with crystals of flesh-coloured felspar, varying from the smallest size up to 2 inches by 1½ inch. This number also includes a beautiful tesselated table composed of fifty-four specimens of polished stones from a porphyry quarry at Retire-in-Withiel.

It is much to be lamented that a material of such high value as granite for all building purposes should, by its enormous cost in London, be placed beyond the reach of all but the most wealthy corporations, and individuals who are compelled to undertake the most imperishable class of buildings. If it were possible to deliver granite in the Thames at something like 2s. 6d. or 3s. per cubic foot, instead of double this price, it would, no doubt, vastly stimulate the consumption of this very superior material, and add greatly to the character of our ornamental buildings. The expensive freight of granite, which is usually sent to London by sea, has hitherto been the barrier to its general introduction, but now that the counties of Devon and Cornwall possess a railway communication with the metropolis, it is not too much to expect so great a reduction in the cost of transport as to bring granite generally into the London market. It appears that the Great Western Railway Company would derive a very handsome profit by carrying up this granite to London, at a cost of 10d. per cubic foot, which would probably effect a saving of several shillings per foot in the price of granite. The same observation applies to the beautiful porphyries of Cornwall, which vary through every gradation, from the highly ornamental crystalline and variegated specimens which adorn the halls of palaces, down to the decomposing and earthy varieties which are scarcely suitable even for road-stone. The finer specimens of porphyry are much used for ornamental flooring, ceilings, columns, pilasters, tables, recesses, tesselated pavements, monuments, &c. The inferior kinds are used for ordinary building purposes, and for road-making. Some varieties even of the soft kind are said to possess the properties of firestone, and to stand exposure to the weather.

ON THE APPLICATION OF ELECTRO-MAGNETISM TO LOCOMOTIVE ENGINES.*

THIS interesting invention by Messrs. Amberger, Nickles, and Cassoh has made the subject of a memoir by Mr. G. Love, C.E., presented to the Society of Civil Engineers of Paris in the course of last June. A discussion was immediately opened upon the subject, a detailed account of which was given at the time by the *Annales des Chemins de Fer*, and the *Journal des Chemins de Fer*. The communication was received with feelings of great interest by many of the members present, but three of the engineers opposed strongly the memoir, so far even as to deny altogether facts which the author and many others had been, for a long time, accustomed to look upon as established. In consequence of this Mr. Love felt himself obliged to submit to the society another memoir, in which he investigated more completely the facts previously disputed. The effect of this new memoir was such as the author wished to produce, viz. to determine one of those engineers whose high position on railway working lines should allow it, to take the invention in hand and try it on a large scale. Mr. Sauvage, an eminent government engineer, who has the management of the locomotive department on the Paris and Lyons railway, kindly offered the inventors the means of putting their invention to the test of experience, and they have now been engaged for upwards of a month in preparing the apparatus and engine, with which a decisive experiment will shortly be tried.

The principal object of this notice is to give an abstract of the last memoir; with the hope it may induce practical men to look candidly on the new invention, which seems to us to promise, even in its infancy, to bring important changes in locomotive engines, and also in the construction of railways.

* To be continued.

Amongst the objections made to the first memoir was one which, if it had been true, would have proved the impracticability of ever using electro-magnetism to increase the adhesion of the working wheels of a locomotive engine. It may be useful to remind our readers here in a few words, that the invention consists in a long wire of copper, clothed with silk, and so disposed as to make a great number of circumvolutions round the lower part of the wheel without touching it. When a current of electricity produced by a battery of Buntzen is allowed to run through this wire, or *coil*, the part of the wheel which comes in contact with the rail is transformed into an artificial load-stone, the well-known property of which is to adhere strongly with iron. This in consequence produces an increase of adhesion, the value of which, it is easily understood, can be varied at liberty, according to circumstances. The same battery, when not used to give adhesion, may be turned to act on an iron break, which comes down on the rail like that of Mr. Laignel, and produces powerful friction without the least combination of levers or gearing. A break made on that principle has been lately adapted to a waggon of the Great Western Railway, and it was a matter of no little astonishment to witness the force it displayed, although a very small part of it was touching the rail on account of it being rather out of shape. Now the objection alluded to was this: the wheel electro-magnetized being in contact with an indefinite length of rails, and these touching the earth by a great number of points, there will be a loss of fluid, such as to reduce nearly to nothing the increase of adhesion; or a most powerful battery, and consequently a very large expense, will become necessary to increase it to an efficient and useful degree. This, however, Mr. Love showed to be wholly unsound. We proceed to give a short account of the other objections, which were, in the whole, a mere denial of the following propositions:—

1st. The adhesion of locomotive engines is frequently insufficient. It is not in proportion with their power.

The maximum of adhesion generally corresponds to the greatest effort the engine is capable of producing at the circumference of the driving-wheels, and it is calculated to be about the one-fifth of the weight incumbent upon these wheels. But we know well this quantity of adhesion may, according to the state of atmosphere, go down so low as to become only the one-fifteenth or even the one-thirtieth of the said weight, so that the quantity of adhesion the engine *can provide* varies within considerable limits, entirely out of the control of the engine-man. Now the adhesion the engines *must provide* varies also within tolerably extensive limits, according to the weight of the train, the speed, and the degree of inclination of gradients. Hence, we understand, that it may occur, and indeed it does occur frequently, that the engine can only dispose of a very small quantity of adhesion when the maximum should be required, a circumstance which creates delays, collisions, and at least puts the companies frequently to the extra expense of auxiliary or pilot engines.

Here we find in the memoir a table in which the author gives numerous instances of engines belonging to French railways, with the necessary quantities of adhesion they require on a gradient of 1 in 200; in consequence of their usual speed and the weight of the trains they are calculated and frequently called upon to drag. He has placed opposite the quantities of adhesion, *maxima* and *minima*, these engines can provide according as circumstances are favourable or not, and it is shown by this table that the *required quantity* of adhesion is often double of the quantity that an engine can dispose of.

The conclusion that may be drawn is, that an engine cannot be held to possess a sufficient quantity of adhesion unless her *minimum* should be equal to the *maximum* she may be called upon to provide. It is evident that an engine placed in such a condition might do her full duty in spite of the slippery state of the rails caused by the fog or rain, or other circumstances. But it is equally evident, that such a result could not be aimed at, unless her weight should be increased enormously, far beyond what may be necessary for the strength of her pieces.

2ndly. The insufficiency of adhesion is one of the causes of the limitations of the gradients in the construction of railways.

The power of an engine is such that it would enable her to climb up very steep gradients, provided the speed should vary properly in an inverse ratio; but it must be observed that the steeper the gradient is the greater must be at the same time the *necessary quantity* of adhesion, so that this quantity draws nearer and nearer the maximum the engine can dispose of in the most favourable circumstances, as the gradient goes on increasing. But we know very well that the only quantity to be depended upon is her *minimum*. It insures that increasing the steepness of gradients is increasing in a great proportion the chances of stoppages, collisions, or extra expenses of auxiliary engines, inconveniences that a wise engineer will avoid as much as possible in reducing the gradients, and making tunnels or deeper cuttings, &c.

3rdly. Electro-magnetism taking away all uncertainty on the quantity of adhesion that may be obtained to meet what may be required at any time, will be the means of adopting steeper gradients, and, consequently, of reducing considerably the cost of railways.

This requires no further demonstration: we shall content ourselves with this remark of Mr. Love, that many secondary lines, where speed is not so much wanted, and which could never be thought of being undertaken before, will be easily made with very little expense compared to what should have been necessary with the limited gradient now adopted on most railways.

4thly. Electro-magnetism may also be of great service to lines opened to traffic.

We can see at once, for instance, that the connecting rods of coupled engines, which are in the eyes of all practical men a bad and dangerous system for obtaining the necessary degree of adhesion, will be done away with. There will be no longer any necessity either to fix, in bad weather, those barbarous and absurd sand-boxes in front of the driving-wheels, which, if they get by these means the adhesion required, project the sand into all parts of the mechanism, and wear it out rapidly. Besides, coupling being dropped entirely, companies will soon find a good saving in the maintenance of the roads, which, every body knows, suffer a good deal from that system. Another cause of rapid destruction of the roads, and breakage of rails, is the enormous weight that acts on the driving-wheels. With electro-magnetism weight being no longer a necessary condition for adhesion, that of an engine will be distributed as equally as possible on the three pairs of wheels, and besides the advantages derived from thence for the maintenance of roads, it will permit engineers to limit themselves, in future, to rails of moderate size and weight.

5thly. The principle by which adhesion is now obtained is the most serious obstacle to a more extensive application and improvement of railways and locomotive engines.

Indeed, what sort of improvement may be wished in the new system of roads? One of such a nature as would permit the application of them to those countries, the hilly constitution of which threatens them with being deprived of railways for ever; and we see at once that this desirable object can only be attained in making *cheap railways*, and cheap railways can only be made with *steep gradients* and *light rails*: and who does not perceive that the present *uncertainty of adhesion* and the *enormous weight presently required* on the driving-wheels, is a complete bar to that progress?

Again, what improvement should be looked for in locomotive engines? It would be very desirable that an engine could produce a less costly power, that its weight should be reduced a great deal. But the principle of adhesion is such, that it forbids altogether to seek for the means of diminishing the weight of engines and *profit of an invention* that would

place in our hands too light an apparatus producing cheaper force. Thus, the discovery of Mr. Boutignies, which, it is thought, will permit the construction of boilers of a very little weight compared to those now in use, and giving *dry steam*, compressed air cylinders, machines put in motion by electricity, &c., all these inventions, which it is not unreasonable to expect will be brought one of these days to a practical form, must be laid aside as long as we stick to the *principle of weight* for adhesion.

Mr. Love concludes with the observation that it is very seldom that an idea, however good, comes to a shape useful to industry as long as it remains in the hands of theoretical men. Thus, steam would still lie asleep and useless in Papin's Digester, if practical men had not taken it from the hands of the most learned people. What has occurred for steam will no doubt be again the case for electricity. Up to to-day this powerful fluid has only been studied in cabinets of physics, and for a long period of time the only things that have issued from that source are the electric telegraph and a great number of scientific playthings. The time is not far off when the highly interesting problem will be solved,—shall electricity take the place of steam?

THE CLASSIFICATION OF MEDIÆVAL ARCHITECTURE.

I am unwilling, not being one of the principals in the discussion of this subject, which has appeared in your columns, to make unreasonable claims upon your valuable space; but the subject is to me one of so much interest that I cannot refrain from offering a few remarks arising from Mr. Sharpe's last communication, in which, by the way, I will endeavour to be less complimentary and more specific than in my last.

As in all such questions the honour of precedence is of some little value, my first object shall be to correct two misapprehensions upon that head. Of the two leading systems of classifying *Pointed* Architecture, the threefold division is popularly attributed to Mr. Rickman, and the four-fold to Mr. Sharpe. To neither of these gentlemen, however, does the honour of *precedence* justly belong, though to each is to be attributed much credit for placing their several systems in a popular and generally intelligible form.

I am not sure what is the date of the first edition of Mr. Rickman's "attempt," but it was certainly anticipated by several years, both in its classification and even, in some degree, in its nomenclature, by a work now little known, and whose author, though still living, has never, that I am aware, attempted to vindicate his claims of precedence, but has, with singular modesty, allowed them to be made to one who at a later period erected so far more perfect a superstructure upon *his* foundation. I refer to the "Description of the Cathedral Church of Ely," by the Rev. George Millers, then minor canon and sacrist, now registrar of that cathedral. This work, of which the second edition was published in 1808, divides the entire range of English architecture into five "*Ages*," viz., "Saxon," "Norman," "Early English," "Ornamented English," "Florid English." We have here Rickman's divisions, and almost Rickman's nomenclature; the only real difference being in the last term, "Perpendicular" being Rickman's own. Mr. Millers, however, having formed his ideas almost exclusively from the study of his own cathedral, was led into two rather serious errors; the one from his adoption of the opinion of Bentham and others as to the supposed remains of the Saxon Conventual Church, which led him utterly wrong as to the characteristics of Saxon architecture; the other from imagining that the flowing windows to the aisles of the six eastern bays of the cathedral, which were copied in the fifteenth century from the adjoining work of Bishop Hotham, were veritable specimens of the style of their age: this led him to extend his "Ornamented English" Age far beyond its proper limits, an error very excusable in so early an attempt at classification, and affecting in no degree his claim of precedence.

I will next claim for my friend Mr. Freeman the honour of precedence over Mr. Sharpe as to the *four*-fold division. Mr. Sharpe, it is true, disclaims all credit for originality, but still says, "I was, I believe, the first in my paper on the Geometrical Period, read at the Lincoln meeting of the Archæological Institute, in July, 1848, and published the same month in The Builder, to propose publicly the formal adoption of this new classification;" and he then says that, "in 1849 we find Mr. Freeman" (in his "History of Architecture"), "evidently unconscious of my earlier proposition, suggesting an exactly similar fourfold division as subordinate to a higher twofold division." Now, Mr. Sharpe does not seem to be aware that Mr. Freeman first brought forward his *two*-fold, and subordinately *four*-fold, division, in a paper read before the Oxford Society, in November, 1845. I have not that paper at hand, but I well remember reading it with great interest, as well as the long discussion which arose from it in the *Ecclesiologist*. In a letter, written by Mr. Freeman to the last-named publication, and dated April 3, 1846, the system is distinctly enunciated. In it, he advocates primarily the twofold, and secondarily the fourfold division in the clearest terms, and even states that a paper had been read by Mr. Cox, in which he "entirely adopted" this division: he asserts that "on philosophical principles the unity of the Decorated style falls to the ground,"—that "no such broad change in principle separates the Lancet from the Geometrical, or the Flowing from the Perpendicular, as divides pure Geometrical from pure Flowing;" and he yet more distinctly says, "I reckon then two great divisions of Gothic, each subdivided into two classes; and *these four styles* I would call Lancet, Geometrical, Flowing, and Perpendicular."

Among my own papers I find a copy of a letter I wrote to Mr. Freeman, in August, 1846, in which I agree to his divisions in the sense, not admitted by himself, of thinking the Geometrical "the termination of the ascending scale," and the Flowing as "the beginning of the descent," and I express my opinion that the point which divides these styles, "however indistinct, is the most important era in the whole history of Pointed Architecture." It is curious enough that this letter contains in its margin nearly the same circular diagram suggested in Mr. Sharpe's last communication. When two years later I saw Mr. Sharpe's drawings at Lincoln (I missed the pleasure of hearing his paper) I naturally took it for granted that he had taken his system from Mr. Freeman.

I think Mr. Sharpe hardly does justice to himself or his subject when he argues that, because our architecture "was in a constant state of progress or transition," its divisions must necessarily be arbitrary; that these divisions must be viewed rather as *periods* than as *styles;* and that of these periods the middle portions are equally transitional with the extremities.

If the divisions are simply arbitrary, why so much discussion as to whether they should be *three* or *four?* If they are mere "periods," why divide them so unequally as 70, 55, 45, and 190 years? The answer is obvious: viz., that we perceive four distinct phases of "style" prevailing through perfectly unequal periods, and consequently that, though both "styles" and periods, they are much more distinctly the former than the latter; and if so, it is manifest that their central portions are by no means transitional in the sense in which that term may be applied to their extremities.

An apt illustration of this may be found in the prismatic colours. They, as our Gothic architecture, are in a constant state of transition; but does this disprove the existence of three primary colours,—does it make the subdivision wholly arbitrary,—or does it prove that red, blue, and yellow are as transitional as purple, green, and orange? It is quite clear that a constant state of "progress or transition" is not inconsistent with the periodical appearance of pure and distinct types, which, though parts of a general system of transition, are not in their own nature transitional. Mr. Sharpe's "*transitional* period" is unquestionably such *par éminence*, as being that between two distinct classes of art, instead of being only between the different phases of the same art; but I contend that, though less marked, the passing of the divisions of Pointed architecture into each other are equally transitional with that of Romanesque into Pointed.

I think Mr. Sharpe's reply to my suggested difficulty arising from foreign examples the only satisfactory one which could be made; and having practically held with the fourfold division ever since its first enunciation by Mr. Freeman, I must thank Mr. Sharpe for having, by simply cutting the knot, removed the only misgiving I had.

I believe, though in a minor degree, a similar division exists in foreign examples, and I hope that this may be worked out in detail by some competent hand. Certainly the absence or presence of the curve of contraflexure is, even abroad, the great distinction between early and late examples, though abroad it is seen only or chiefly in minor parts, as cuspings, &c., rather than in leading lines. Possibly, then, foreign Pointed architecture, like our own, may eventually be divided into four classes, and if so, we may, which is most desirable, agree upon one general system, though, perhaps, only numerical, *applying to all*, but at the same time have for each country a concurrent national nomenclature, descriptive of its own series of changes. The French system, and that of the *Ecclesiologist* would do for the former, were they *four* instead of *three*-fold; and for the present, by dividing the "Secondaire," or "Middle Pointed," into "Early and Late," they may for convenience be used concurrently with more precise national classifications.

What I have said I will recapitulate thus briefly:—

1stly. The threefold division, usually attributed to Mr. Rickman, belongs really to Mr. Millers.

2ndly. The fourfold division advocated by Mr. Sharpe, originated with Mr. Freeman.

3rdly. That system would be more correctly described as four *styles*, or phases of style, than merely as "periods."*

4thly. I would suggest its general adoption for English architecture, though I think the usual terms, "flowing" and "perpendicular," would be conveniently retained, instead of "curvilinear" and "rectilinear."

5thly. We should have, concurrently with this, distinct national systems for other countries, and one general system, even if simply numerical, *applicable to all*.

Geo. Gilbert Scott.

THE FREE GRAMMAR SCHOOL OF SAINT OLAVE'S AND SAINT JOHN'S, SOUTHWARK.

An account of this foundation has recently been printed for private distribution by Mr. G. R. Corner, F.S.A., and contains much interesting matter, showing strikingly, amongst other things, the great increase of value which time has given to property. Mr. Corner says,—

"Henry Leeke, of the parish of St. Olave, Southwark, brewer, who may be considered as the founder of this school, by his will, dated 12th March, 2nd Elizabeth (1560),† desired to be buried in the church of St. Olyve's, Southwerke, of which he was a parishioner; and he bequeathed out of the rents and profits of certain houses and tenements within the precincts of St. Martin's-le-Grand, which he held by virtue of a lease from the dean and chapter of St. Peter's, at Westminster, 20*l.* a-year, during the term of the said lease, to be distributed for certain charitable purposes by the churchwardens of St. Olave's, of which he

* As our object is *to revive*, and not merely to construct a history of Pointed architecture,—as our wish is not merely to chronicle the past, but to make its beauties the nucleus of *present* and *future* art, it appears to me that the varieties of *style*, rather than mere historical transitions of *period*, must necessarily form the ground-work of our nomenclature; for how can we divide our own works into "periods?"

† Proved in the Prerogative Court of Canterbury, 23rd April, 1560.

directed 8*l.* per annum to be applied towards the maintenance of a free school in St. Savyor's parish, but if within two years after his death a free school should be built and established in St. Olyve's parish, then he gave the said 8*l.* per annum towards the same.

On the 13th November, 1560, it was resolved by the vestry, 'that the churchwardens and others should seek to know the goodwill and benevolence of the parish, what they would give towards the setting up and maintenance of a free school;' and on the 22nd July, 1561, it was ordered that the churchwardens should receive of Mr. Leeke's executors the money given towards the erection of a free school, and that they should prepare a schoolmaster to teach the poor men's children there, according to the Queen's injunctions, which schoolmaster should be sufficient to teach the children of the parish to read and write and cast accounts; and further, the churchwardens were to prepare and make ready the church-hall with benches and seats, and all things necessary for the said school, which was to be ready against Michaelmas then next.

In 1567, it was resolved by the vestry that the school should be made a free school, and established by authority, and an attempt was made to procure an Act of Parliament for that purpose, which failed. But Queen Elizabeth, by letters patent, bearing date the 26th July, in the 13th year of her reign (1571), after reciting that the inhabitants of the parish of St. Olave, Southwark, had, at their no little cost, labour, and charge, ordained and erected, in the aforesaid parish, a grammar school, in which children, as well of the rich as of the poor, being inhabitants of the aforesaid parish, were instructed and brought up liberally and prosperously in grammar, in accidence, and other low books, ordained that the said school from thenceforth should be a grammar school, for the bringing up of the children and younglings of the parishioners and inhabitants therein as aforesaid, and should be called 'The Free Grammar School of Queen Elizabeth of the Parishioners of the Parish of St. Olave, in the County of Surrey.' * * *

For several years after the school was established it was maintained by the churchwardens, out of the general funds of the parish, they receiving Leeke's Gift; Richard Dowsett's of 40*s.* per annum, given in 1561; Lamb's Gift, 1572; and Bullman's, 1574, towards it; but it was considered advisable to vest sufficient property for its support in the governors; and at a vestry, held on the 4th May, 1579, it was agreed that, 'Thomas Batte, William Willson, Oliff Burr, Thomas Harper, Ryc Denman, and Ryc Pynfold, should take order with Mr. Godyer and Mr. Eggelfelde, *to pass over Horseydowne to the use of the schole.*'

Horseydowne, or Horsadown (now Horslydown), was then a large grazing field, down, or pasture for horses and cattle, containing about sixteen acres, belonging to the parish; this field had been purchased by the parish of one Hugh Egylfeld, or Egglefield, in 1552; and it appears by the minutes of a vestry, held 5th March, 1552, that Egglefield had demised and granted to the churchwardens and the assistants all his right, title, and interest, which he had by virtue of a lease which he bought of Robert Warren, and that he should have, for the same, the money which he paid to Warren and the grazing of two kyne, in Horseydown, for his life. The sum paid by the parish to Egglefield, was 20*l.* and twelve pence.

At the time it was resolved to assign this field to the governors of the free school, it was used by the parishioners for pasturing their horses and cattle, and for digging sand and gravel; and there also were the parish butts for the practice of archery; but subject to such privileges of the parishioners the field was let to one Alderton, at 6*l.* per annum. * * *

In addition to the endowment given by the parish and the legacy given by Mr. Leeke, the governors of the free school received other contributions from individual benefactors, including various tenements.

Robert Tyler, of Stockwell, gentleman (who was many years clerk to the governors), by his will, dated 30th November, 1809, gave to the governors 300*l.* sterling (after the decease of his wife), the interest whereof to be applied for apprenticing poor boys educated in this school, or in such other way as the governors might think fit. He also gave to each of the masters and ushers of the school, at his wife's decease, 50*l.* Mrs. Tyler died in July, 1833, and the legacy has been received by the governors and invested in the funds.

In the reign of King Charles the Second, the governors thought it advisable to procure a more extended charter, and accordingly, by letters patent, dated 2nd May, 26th Charles II. (1674), the charter of Queen Elizabeth was confirmed, the provisions of that charter were repeated rather more formally, and the governors were enabled to hold lands to the amount of 500*l.* a year, to be applied for the maintenance of the schoolmaster and ushers, the erection and support of the school-house, and the lands and tenements thereto belonging, for defraying the necessary charges of the governors, for the maintenance of two scholars out of the school at the University, till they should take the degree of Bachelor of Arts, and also for the setting out poor impotent persons of the parish of St. Olave, and for erecting and maintaining a workhouse for setting poor persons of the parish at work, and not otherwise.

Horslydown having been covered with houses erected on building leases, which have fallen in, the yearly income of the school is now very considerable.

The old school and the schoolmaster's houses stood in Churchyard-alley, nearly opposite to St. Olave's church, and having been pulled down in or about the year, 1830, for making the approaches to New London-bridge, a piece of ground in Duke-street was granted by the City of London, as a site for a new school; but that ground being afterwards taken by the London and Greenwich Railway Company, the New school was ultimately built on a piece of ground in Bermondsey-street, provided by the Railway Company for that purpose.

The first stone of the new school was laid on the 17th November, 1834, by Charles Barclay, Esq., M.P., then warden, assisted by the rest of the governors, in the presence of a numerous company of the inhabitants of both parishes; and the building was sufficiently completed to be occupied by the master and scholars, and to hold the commemoration on the 17th November following.

In the year 1849, this new school was required by the London, Brighton, and South Coast Railway Company, for the enlargement of the railway and station, and being empowered by their Acts of Parliament to take it on certain conditions, they agreed with the governors to pay them a considerable sum of money for it, the governors undertaking to find another site for the school, and to rebuild the same.

A proper site for the school has only now, however, been fixed upon, and in the meantime the school is carried on in a building in Maze Pond, formerly Messrs. Harris and Billiter's warehouse, rented by the governors, and temporarily fitted up for the purpose."

The following extracts from the scheme for the management of the school, approved by the Court of Chancery in 1837, will give some idea of the means now at the disposal of the governors:—

"That the school lately built by the governors, situate in Bermondsey-street, shall be called 'The Classical School,' and that the branch school lately erected in Magdalen-street, shall be called 'The English School,' and that there shall be in such classical school at the least one master and two ushers; and that there shall be in such English school at the least one master and one usher.

That a sum of one hundred pounds a year, at the least, shall be allowed for apprenticing out such poor scholars as may apply, to fit and proper trades or businesses, on their leaving school, as the governors at a meeting or meetings duly convened from time to time, may think most beneficial, and due publicity of such provision be given in the said schools.

That four exhibitions not exceeding eighty pounds per annum each, at either of the universities of Oxford or Cambridge, be allowed for scholars from the said classical school, who may be desirous of taking the benefit thereof (being deemed by the examiners of the said school to be properly qualified), and that upon occasion of filling up every exhibition, public notice thereof be given and circulated through the said parishes of St. Olave and St. John, and by notices affixed on some conspicuous part or parts of the said schools and premises, one month at least previously to filling up such exhibition, in order to invite and encourage more of the scholars to take the benefit of such exhibitions, it appearing that only five exhibitions have been granted, or applied for, in the last thirty-six years.

That an annual sum of one hundred pounds at the least be paid and distributed to, and among such infirm, decayed, and poor parishioners, inhabitants of the said parishes, as do not receive parochial relief either in money, clothes, bread, coals, or otherwise, and at such times and in such proportions as to the governors at meeting duly convened for that purpose shall seem most beneficial.

That the governors having, for several years past, usually appropriated some part of the funds of the charity to the support of a girls' school in each of the said parishes, be allowed in future to give such schools such sum as they shall, in their discretion, think fit, but not exceeding to each school the annual sum of fifty pounds.

That an annual sum of one hundred pounds be paid, or allowed to the warden for the time being, for or towards the expenses for which the same has heretofore been paid to him, and particularly on the occasion of the public examination of the scholars."

The classical school consists of about 320 boys, all taken from the two parishes of St. Olave and St. John, 100 of whom are taught Latin and thirty are also instructed in Greek.

The English school, situated in Magdalen-street, was erected by the governors in the year 1824, and contains about 260 boys.

The boys are admitted by presentation from the governors, which are freely given to the parishioners, but a certificate is required from two inhabitants, householders, that the parties are resident in one of the parishes.

The seal of the corporation, dated 1576, and distinguished by a rose displayed, the ancient cognizance of Southwark, represents the master sitting in a high backed chair at his desk, on which is a book, and the rod is conspicuously displayed to the terror of five scholars standing before him, exemplifying the maxim of King Solomon, "Qui parcit virgam odit filium."

A THEORY OF THUNDERSTORMS AND WATERSPOUTS.

THERE are two kinds of electricity, viz., positive and negative, both having a tendency to unite. Positive electricity is always found in the higher regions of the atmosphere; and the colder and more rarefied the air, the greater its quantity. Negative electricity is always found in the earth and in the water, from which it escapes, the warmer and more expanded the air. Hence, no thunderstorms in winter and in the cold regions, except in very rare cases.

Thus, the body of air swimming on the earth, is a constant obstacle to the union of these two kinds of electricity, which may be considered in the light of the two genders of the animated and vegetating creation. When the rays of the sun, in certain states of the atmosphere, fall particularly strong on the earth or the sea, their accumulation and intensity cause the air to expand, and in proportion to this accumulated heat and consequent expansion of the air, the negative fluid is liberated from the earth or disengaged from the sea: it rises all over the more than ordinarily heated surface, and filling the air, produces in men and animals that lassitude of body and depression of spirits which we always complain of in sultry weather.

Whilst this process of liberation goes on, the sky becomes overcast, or clouds begin to form, and the positive fluid of the upper regions, floating there loosely like its relative

below, finds at once in these clouds a place of rest into which it draws like water into a sponge, and at the same time a conveyance through its opponent, the air, towards the object of its attraction. During this process of concentration above and below, both electricities begin to exercise their mutual influence, their inherent magnetic power having increased with their accumulation, so as to bring them, as it were, within sight of each other: the saturated cloud, joined by others floating in the air and likewise attracted by one another, begins to lower as it becomes larger and more charged, and its movements are more or less directed by the accumulation of negative electricity, which draws it down, by atmospheric currents, and by the face of the country. If the place be mountainous, thunderclouds will sometimes approach from opposite directions, and hover about the tops of hills and mountains as if they would not leave them.

The negative electricity tending to rise, and at a certain height finding itself everywhere impeded by a denser and colder state of the air, seeks a conductor, by the side of which it meets with less opposition. Thus, resisted by the higher atmosphere, it leans against any elevated object that may be near, ascending close to its surface and that of the air pressing against it, forming, as it were, a continually upward flowing stream, towards which the electricity of the vicinity takes its course and keeps up the supply. The fluid, however, will prefer such conductors as have most affinity to it,—namely, all those bodies that contain a great, if not the greatest, amount of latent heat, or latent electricity, like metals, trees, &c. The more pointed the conductors, the more easily will the stream, forced on from below, quit its hold, and emerge into the opposing atmosphere: the rounder or longer the upper extremity of the conductor, the more the negative fluid will accumulate there, and the more difficult will be its passage away into the air.

In this manner, then, the negative electricity floating on the earth or on the sea, is directed in as many streams upward as there are conductors, and the better the conductor the more concentrated or condensed will be the stream: the best and highest conductors take the lead, and in most cases absorb the lower and lesser streams of the vicinity. If on the sea, a ship will be the conductor towards which the electricity of the surface will incline: on land, the chief conductors will be elevated buildings, particularly steeples with metal vanes, &c., trees, as also the human body and animals in an erect position, where higher conductors are wanting. In the case of mountains, the fluid will creep up the sides, and arrive at the summit more and more concentrated, like many streams merging into one: hence its power at this elevation to attract and arrest electric clouds. Vapours will also continue to rise from the earth, and, charged with the negative electricity through which they ascend, they will form into light clouds, and rapidly take their direction towards the positive clouds above.

By these means, the atmosphere is filled with streams and volumes of the negative fluid, and the stronger and higher they are, the more they will attract and hold fast the electric clouds: the negative clouds will swell the positive ones, and they will amalgamate without explosion, if the former be but lightly charged with the fluid: if heavily charged, the mutual attraction is stronger and more vehement, and the point of union at a greater distance: the intervening air is sufficiently dense, and the friction sufficiently great, to ignite the positive fluid in its passage to the negative cloud, and thus the union of the two clouds will be accompanied with lightning.

In the same way, when within the point of union, the positive electricity will dart forward from its hiding-place towards the electric streams from the earth, ignite by the frictions with the air it has to pass through, and cause as many volumes to explode in the air, or down to the very bowels of the earth if uninterrupted, as may be dense enough and within its magnetic reach, to be capable of ignition.

In all cases, where resistance of the air to the amalgamation of the two electricities is not sufficient to cause ignition, the union will take place without the appearance of lightning, and have the same destructive effect without the fire, though no such effect will be visible, if the two electricities are not of sufficient density.

The stronger a cloud is charged with electricity, the blacker will be its appearance: magnetism will hold the fluid together in as compact a body as possible, and the vapours of the cloud are consequently contracted, with the charge they contain, into a much denser body than in the ordinary way.

By a similar process to the above, waterspouts are formed at sea.

In a "dead calm" the sun exercises, as a matter of course, a more powerful influence on the water than he does when it is in any way agitated: by the intensity and accumulation of his rays on the quiescent surface, the air resting upon it is unusually rarefied; an extraordinary evaporation takes place, as if the sea were steaming; and an immense quantity of negative electricity is produced or liberated. The electric fluid, tending to rise, and the air being opposed to its passage, unites with the generated vapours as a better—in this instance as its only—conductor: the particles of vapour are heavier than the expanded air and unable to ascend to form a cloud; therefore, attracted and held together by the electricity they contain, and trying to force a passage upwards, they all move towards the centre of the foggy surface, until by degrees the whole mass assumes the shape of a funnel upside down, and becomes more and more elevated. In the absence of a conductor, this body of electrified vapours forms, as it were, a wedge in the shape of a cone, to part and penetrate the impeding air, through which it otherwise could not ascend. Whilst this forming of the wedge, or screw, takes place, the air round about cannot entirely remain passive, but is slightly set in motion by the spiral-like accumulation in the centre, in the same direction as the wedge is screwing or winding itself upward; and by degrees the air will press heavier on the outer side of the funnel, and less and less towards the middle, where it meets with less surface, and where its pressure is more slanting, so as to help in the formation and raising of the negative pyramid.

The rising of this electric pyramid, however, would not take place, if before, or at the same time, no cloud had been forming in the sky, saturated with the positive electricity of the upper regions, and exercising its attractive power on the kindred body below: the two fluids tend to union, but have no "go-between," no *conductor* to effect it. Thus, it is the attraction from above that makes the negative vapours (unable to rise, being heavier and denser than the air) assume the natural shape of a funnel-like wedge, whilst the attraction from below, in the absence of numerous and widely dispersed conductors, causes the same appearance in the cloud above: it is a kind of mutual magnetic suction, the one causing the wedge or cone above, and the other causing the cone below, until they meet, the former at the same time pressing by degrees upon the air, and setting it likewise in motion.

That previous to, or on their actual meeting, no explosion is taking place, may be accounted for in several ways.

In the first instance, though the extreme point of each cone may be seen, yet it is likely that each one sends forth some rays, or thread-like streams of electricity, as a feeler—an advanced guard,—to prepare, as it were, the way, which the increased force of magnetism, concentrated like the rays of the sun in a burning-glass,—acting now like a minute bridge from the point of one cone to the point of the other,—has made penetrable. These fore-posts meet long, or at least some time, before the visible cones come in contact; therefore, the amalgamation of the two fluids, diffused over a large space of vapours, and the union of the two cones, is so gradual, that no ignition can take place, there being no friction, or but very little, with the air.

The absence of explosion may, in the second place, be accounted for by the exceedingly saturated or condensed state of the vapours: they are too much like water to let the electric fluids have an easy escape, though it does not diminish their relative attraction, their impetuous inclination being only somewhat fettered.

When the union of the two cones has been accomplished, and the two fluids have been amalgamated, the whole, being now too condensed to be held any longer in suspense by the air, will violently burst, or come down in rain or hail, and, as may be, with lightning or without, accompanied with great noise, though without thunder.

All these phenomena may easily be accounted for, particularly the bursting, the rain and hail. Lightning will more or less depend upon the density of the respective cones and their admixture with air during the amalgamation of the two electricities; and the lightning taking place within the cones, and merely flashing out (as it is said), readily explains the rumbling noise; but not traversing, not striking through the exterior atmosphere, as is the case during thunderstorms on land, accounts sufficiently for the absence of thunder.

If the "dead calm" at sea extends to a great distance, several waterspouts may naturally happen at the same time, each one forming its own centre.

Their motion on the water seems to depend upon the upper currents of the atmosphere, the positive cone leading the negative one: they may also move in the direction of a ship, or a point on land, as centres of attraction and conductors to the electricity by which they are surrounded.

Waterspouts on land happen from the same causes as those at sea; from the high position of positively electrified clouds, and from isolated and powerful conductors of negative electricity from the earth.

The strong winds that generally attend thunderstorms arise from the previously rarefied state of the air, and the pressure of enormous clouds upon the atmosphere: to the rarefied place denser air will naturally flow, and the cloud, or clouds, form, as it were, a bridge, or so many bridges, under whose arches the air will stream with the greatest violence; and the more bulky the bridge, the more impetuous the rush. The rarefied atmosphere will of itself already contract, and make room for more air, owing to the condensation caused by the withdrawal of the rays of the sun behind the cloud.

What effect the rays of the sun may have upon the cloud I am not prepared to say, but merely beg to direct attention to the point.

There may be inaccuracies in this exposition of my theories, but I am sure you will excuse them, not having much time to devote to these objects. I hope, however, that they will be further developed by abler men, and by such as have the opportunity of practical examination and more extensive research.

W. ADOLPH.

NOTES IN THE PROVINCES.

Cleveland.—It appears that a rich bed of iron-stone, of great extent, has been discovered in Cleveland, between Stokesley and Whitby. According to a report of one of the Government inspectors of mines, made in a private capacity, "the principal seam varies from 10 to 15 feet in thickness, and there are two smaller seams lying below it, varying in thickness from 6 inches to 2 feet each." He declares that "in quantity it is inexhaustible," and "the cost of working it a mere trifle." It contains 33 per cent. of iron in the uncalcined stone; and he adds, "there is little doubt of its creating a greater revolution in the iron trade than that which resulted from the discovery of the black band in Scotland. In no part of the country could iron be produced so cheaply as in this district. The Cleveland Hills will become the centre of the largest iron district in England."

——On the 22nd ult., Captain Cook's Memorial School, at Marton, in Cleveland, was opened. The buildings have been erected from designs by Mr. R. C. Carpenter, architect. The contractors were—Mr. M. Bowser, of Stockton-

on-Tees, for the foundations; Mr. W. Bulmer, of same place, for mason's, bricklayer's, and plasterer's work; the late Mr. G. C. Dickinson, of same place, for wood work; Mr. J. Smith, jun., of Redcar, for plumbing and glazing; and Mr. Kellett, of Middlesbro', for slating. The exterior is of stone. The style adopted is the Tudor. Above the main doorway in the porch is a niche, at present empty, which was intended to contain a statuette of Captain Cook, had the funds been sufficient; but we are sorry to learn that, on the contrary, there is a considerable deficiency. The school-room, adapted for sixty children, or rather more, is lighted by a three-light window, cinquefoiled in the heads, at the west end, a similar one at the east end, and a smaller two-light flat-headed window, trefoiled in the heads, to the south, between two buttresses. On the roof is a wooden louvre. On the western gable is a dolphin, as a wind-vane. The interior of the school-room shows a high-pitched open timber roof of trusses, with principal rafters, collars, and curved braces. The wall, for 3 feet upwards from the floor, is lined with hard fire-bricks, as a preventive against the kicks and blows of the children. The ventilation has been attended to by introducing fan air grates, communicating by passages under the floor, with the exterior air, and also by movable weather-boarding in the louvre. The buildings are raised above the ordinary ground, and have a terrace to the west side.

West Lynn.—A contract having been entered into by Messrs. Peto and Betts, to execute a new channel from West Lynn into the Wash of Lincoln, 1,200 men have for some months been engaged in excavation work. The channel will be four miles in length, 30 feet in depth, 265 feet in width at bottom, and 518 at surface. The terms of the contract for two miles through the sand are said to be 20,000*l*. The old circuitous channel, full of shifting sands, will be closed up, and about 30,000 acres, it is calculated, will be laid dry and made available for agricultural purposes.

Norwich.—St. Peter's Church, Hungate, one of the oldest in the city, is being partially restored. The workmen, on removing boarding and matting from the south of the pulpit, discovered the remains of a chapel, dedicated to St. John the Evangelist. The portions laid open are a sedilia and piscina, a portion of the altar stone, and the greater part of the canopy. The colours of the canopy and sedilia—gold, purple, and scarlet—are still plainly traceable.

Wisbech.—The Board of Guardians at Wisbech have unanimously "resolved, that a committee be appointed to consider the present plan [of the workhouse], and if approved of, to appoint an architect to prepare a plan, specification, and estimate of the expense [of its enlargement]."

Wappenbury.—A monument has been erected in the chancel of Wappenbury Church to the memory of an eminent agriculturist. It is of Caen stone, with Tuscan columns of black marble. The design consists of a plinth and sub-plinth of stone, in the centre of which is a marble figure of Ceres, as if sitting in a cornfield lamenting the loss sustained. At the feet is the sickle, and on either side are panels overgrown with ivy, in which are depicted the plough and harrow.

Mansfield.—The Wesleyan chapel here, which was for many years the mansion of the celebrated Lord Chesterfield, whose dining-room now forms the vestry, the wings being occupied as the residences of the Wesleyan ministers, has recently undergone remodelling and renovation. The body of the chapel has been improved, the pewing readjusted, and the accommodations for the poor improved.

Leicester.—An appeal to the public to complete the works of restoration in St. Martin's church has been made by the churchwardens. "From estimates already obtained," they state, "and from calculations made for the purpose of completing the repewing of the remaining part of the church on one uniform plan, the restoring of the great western window of the nave, and the clerestory windows on the south side, the further sum of 750*l*. will be required, namely,—

Expense of repewing	£350
The west window and glazing, about	150
The clerestory windows and glazing, about	150
Architect, gas, and extras, about	100
	750

Towards which the following subscriptions have been promised:—

Further donations	£180	
Subscriptions	267	
		447
Deficiency		£303"

The body of the church, they add, would then be completely restored.

Birmingham.—If, says a local paper, the number of new buildings erected, or in course of erection, the abundance of employment for artisans of every description, the decrease of pauperism, the firm maintenance, if not the absolute advance, of dividends declared by local public companies, and the pleasure-takings of all classes (coupled with the low price of food), constitute a proof of prosperity, Birmingham is at the present time more happily circumstanced than at any period within the recollection of its inhabitants. Immense tracts of land which, two years ago, were green fields, are now covered with new streets; while the new survey and valuation which the parish of Birmingham is now undergoing promises to add largely to the house assessments. The number of paupers relieved in the week ending the 30th of August, 1851, was 658 less than in the corresponding week of last year.—A stained widow, by Messrs. Hardman, and dedicated to the memory of Mr. George Wareing, has recently been erected in the Roman Catholic Church of St. Chad, in Bath-street. The window is in the south aisle, and consists of two lights, the one containing a figure of St. George destroying the Dragon, the other of the Virgin Mary holding the Holy Child. Over these figures are canopies, and lower down in the lights are medallions. The remaining portions of each light, and the rose in the head of the window, are filled with a coloured diaper, on a grisaille ground, while round each light runs a floriated border.

Rushall, near Walsall.—In reference to the new church about to be erected here, a local paper states that "applications to the number of fifty-one having been made to the incumbent, and the committee, for plans and specifications on which to found designs for the sacred edifice, a considerable amount of architectural talent was called into requisition, the result of which has been the submission of very numerous first-class designs,—the one selected from which is the production of Mr. James Cranstom, of Birmingham, architect."

Plymouth.—The opening of the new building erected on the site of the old Mechanics' Institute, in Princess-square, took place on Wednesday week. The building has been constructed from the plans of Mr. George Wightwick, architect. On the basement floor are four rooms, two of which are class-rooms, the others being fitted for general purposes. On the ground floor are apartments for the librarian, and two other class-rooms. The library and reading-room are also situated on this floor. Above is the lecture-hall; its entire length being 76 feet, greatest width 37 feet, and height 33 feet: it is calculated to accommodate 380 on the main floor. There is also a committee-room, which can be thrown open in addition, and in which are 90 sittings. The gallery affords accommodation for 350, and on crowded occasions about one-seventh additional standing room is provided for 250, so that accommodation can be provided for about 1,000 persons. The local *Independent*, however, who describes the hall as "coffin-shaped," thinks that the room is not sufficiently large to accommodate the members to be reasonably expected at no very distant period, whilst its shape, from awkwardness of site and the unavoidable circumstance of the immense gallery extending more than half way over the area of the room from one end, ill calculates it to promote the comforts of a full audience. The hall is chiefly lighted from the top by an oval dome, the sides of which are formed of sashes, which serve the purpose of ventilators: the walls are panelled, the panels being formed with plaster mouldings, and around the open part of the hall and in front of the gallery is formed a raised panelling, upon which is carried a continuous scroll-work of flowers. The opening was attended by Lord Ebrington, the mayor of the town, and other gentlemen, by whom appropriate addresses and exhortations were delivered.

Belper.—A sounding-board, in the form of a canopy, carved with crockets, tracery, finials, &c., has been recently fixed over the pulpit in Christ Church. The whole of the congregation are now able, it is said, to hear distinctly. The canopy has been presented to the church by the incumbent. The artist who executed it was Mr. J. B. Robinson.

Bolton.—A gigantic chimney is on the point of completion at the bleachworks of Messrs. Blair and Sumner, Mill-hill. The structure is octagonal, and the entire altitude will be 70 yards and a foot. The only chimney in the borough of greater height, says the *Bolton Chronicle*, is that connected with the machine works of Messrs. Dobson and Barlow, and Messrs. Knowles's cotton mill, which measures about 122 yards.

Bakewell.—The parish church of All Saints has been repewed and redecorated, and was reopened on Thursday week. In October last, it was resolved to repew the church throughout, to remove the Norman piers from the nave, substituting in their place the present ones—which are built in the Early English Decorated style—to make considerable improvements in the organ, and to provide for warming the church by steam carried through pipes. Mr. Hadfield, of Sheffield, was the architect; and Mr. Bath, of Haddon, clerk of works. The repewing has been completed by tradesmen residing in Bakewell. In consequence of the alterations, 200 additional sittings have been acquired, and there is now a total of about 800, a large portion of them, it is understood, free. The total cost of the alterations is 2,000*l*.

Leeds.—The town-council have decided at length to build a town-hall and corporate offices, at an expense of 22,000*l*. without the site, or of 31,000*l*. with it, according to the local *Mercury*.

Newcastle.—The Newcastle and Gateshead Union Gas Company have given notice of an intention to reduce the price of their gas "as soon as possible." The present price is 4s. The recent agitation is said to be operating on the company, and a local paper recommends a little more pressure from without, and asks, "why should the people of Newcastle continue to pay *four* shillings for an article which the inhabitants of Sunderland obtain for *three?*—the article in the latter town being greatly superior to that supplied here." The company have recently been increasing their works at considerable cost, but have nevertheless lately announced a dividend of 8 per cent.

Rugby.—The engine-shed for the use of the London and North-Western Railway Company, now erecting by their station at Rugby, is of considerable size. In front there are places for twenty-five locomotive engines, with tenders, all of a row, and a railway for each. The whole is covered by five roofs. The addition of a transept to the school chapel, now building by Mr. W. Cubitt; the works for the water collection, storage, and distribution; the pipe-laying for sewerage; and the laying of a larger main for the better supply of gas, with the building of more than twenty private houses, show movements in this place. Besides all these, there are the Catholic schools, by the side of Dunchurch-street, from the designs of Mr. Pugin.

Edinburgh.—It has been determined, says the *Edinburgh Courant*, to place the proposed statue to the late Robert Lord Viscount Melville in the centre of the large open space in front of the county buildings. The statue will be in bronze, and has been entrusted to Mr. John Steell. The subscription list is headed by the Duke of Buccleuch, who gives the sum of 300*l*., and the Bank of Scotland, of which the late viscount was a director, subscribes a like amount.

Glasgow.—The south abutment of the accommodation bridge has reached the height

from which the chains are to be suspended. The gateway arch has a fluted pillar on each side of it. The abutment on the north side is not so far advanced, though it is several feet above the level of the gangway.——At the Victoria-bridge the work proceeds with animation, but there is little yet observable in shape of a bridge.

Barntown (*Wexford*).—A new Roman Catholic church has been erected here, and, according to the *Wexford Guardian*, was to be dedicated under the name of St. Alphonsus M. Liguori, on Monday last. The church is oblong, consisting of nave, with north and south aisles, spacious vestries on the north-east, and a baptistry on the south, serving also as an entrance near the south-west corner. The whole building is composed of mountain free-stone, the door-frames, windows, quoins, belting, ridging, and belfry, being granite, and over each window and doorway is an arch of hammered green stone, contrasting with the cream-coloured work of freestone. The east window is lancet-shaped, and of five lights, with rosettes and trefoils, and flanked by a trefoil double window at each side, lighting the north and south aisles, and also the whole south side of the church. Over the window, on the apex of the gable, is a stone cross: another surmounts the baptistry: a Grecian, or florid cross, in a circle, surmounts and completes the granite belfry, containing a rosette aperture, immediately over two large-sized bells, beneath which is a lancet-headed window of three compartments immediately above the west or principal entrance. Each side has nine double light windows,—the vestries and baptistry occupying part of the space, similarly lighted. In the interior the arches are high and sharp, with plain corbels between each, from which rise the trusses which appear to support the roof of the nave, double the height of that of the aisles.

CAB AND OMNIBUS MANAGEMENT.

SOME "Propositions for an improved System of Management for Hackney and Metropolitan Stage Carriages" have been circulated recently,* and will aid, we hope, in leading public attention to a subject that greatly requires fresh legislation. Considering the enormous number of these vehicles, the extent to which they are now used, and the amount of annoyance and vexation that is experienced on all hands, it is surprising that people should remain quiet under the infliction. The grant made to Sir Sanders Duncomb, in 1626, of the privilege to let out sedan chairs in London, recites, "That whereas the streets of our cities of London and Westminster, and their suburbs, are of late so much incumbered with the unnecessary multitude of coaches, that many of our subjects are thereby exposed to great danger; and the necessary use of carts and carriages for provisions thereby much hindered:—and Sir Sanders Duncomb's petition representing that in many parts beyond sea, people are much carried in chairs that are covered; whereby few coaches are used among them:—wherefore we have granted to him the sole privilege to use, let, or hire, a number of the said covered chairs for fourteen years."

What might be said of Knightsbridge now on a Monday morning?

"This patent," says the writer of the "Propositions," "was followed by a proclamation against hackney coaches, strictly commanding 'that no hackney coach should be used in the City of London, or suburbs thereof, other than by carrying of people to and from their habitations in the country; and that no person should make use of a private coach in the City, except such persons as could keep *four able horses fit for his Majesty's service, which were to be ready when called for, under a severe penalty.*' In 1661, the number of hackney coaches having increased to four hundred, and it being found that they created an extraordinary charge upon the inhabitants of London and Westminster, by destroying the highways, it was enacted by Parliament, 'That all hackney coaches in and about the cities of London and Westminster should annually pay, *towards the charge of paving and cleansing* the ways and streets in and about the said cities, the sum of five pounds each, solely for the improvement of the public thoroughfares, and not as a contribution to the Exchequer.' In 1712, an Act of Parliament was passed for licensing eight hundred hackney coaches (which were to pay five shillings each weekly) and two hundred sedan chairs (at ten shillings each yearly) *to the Exchequer*, within the bills of mortality. The fares were thus settled: coaches to go one mile and a half for one shilling, and two miles for one shilling and sixpence."

The writer proposes a central office, with a magistrate sitting every day for transaction of all business relating to omnibuses and cabs; a register of proprietors, conductors, &c., to be open for public inspection; the appointment of inspectors to examine vehicles and horses; the cab-stands to be revised; policemen to be appointed watermen, and paid by salaries; the cab fares to be reduced, and half-mile distances to be marked on the lamp-posts throughout the metropolis; further, that the duty be reduced from 1s. 6d. to 6d. per day.

By association, the omnibus proprietors at this moment are in a position to impose on the public in any way they please, and could run down almost any opposition that might be set up in consequence. Their recent arbitrary increase of the fares throughout the metropolis affords an instance. As quaint, inimitable Mrs. Keeley says, in "Apartments," at the Princess's Theatre,—"Every thing's dear in Exhibition time: why, they charge 4d. now for a threepenny 'buss!" The public should look about them.

* Appleyard, Farringdon-street.

SUNDAY.

IN perusing a late number of THE BUILDER, my attention was arrested by a short paragraph among the "Notes in the Provinces," dated Leswalt, and referring to the erection of a column in that parish to the memory of the late Sir Andrew Agnew. The labours of that excellent man, in endeavouring to promote the better observance of the Lord's Day, are therein spoken of somewhat slightingly. The paragraph appeared to be an extract from some local paper, and I hardly think that the sentiments therein expressed are really those of the editor of THE BUILDER. I infer this from the spirit of propriety which characterises that paper, and I hope its conductor will not think a few words upon the subject of the Sabbath out of place in its pages. I often read in that work some words of good advice to the working man, and I always see that it is edited by a real friend and advocate of the rights of that class.

I am thus led to offer a few words in behalf of one of the best blessings of the labouring man. What, I ask, would shortly be the condition of those who are born to toil without this Divinely appointed weekly interval of rest? and, whether it be our lot to labour with the head or hands, I think its repose must be equally necessary; and I often pity those who, from indifference and unconcern on this subject, or from a too anxious desire to make provision for this world, are led to disregard or mis-spend the Sabbath. On such persons I would urge the importance of giving that sacred day to the pursuit of objects worthy of their solicitude; and I would also venture to point out to those who have many persons engaged in their employ, the duty of so making their arrangements as to afford to their dependents, as much as practicable, the rest of the Sabbath-day, in accordance with the injunction of the Divine Author of this institution, "that thy man-servant and maid-servant may rest as well as thou."

It is, I think, too much the practice unfairly to charge upon the advocates of Sabbath observance, a wish to limit the enjoyments of the poor man; and the excellent individual to whom reference has been made, met with much reproach and scorn for his zeal in a cause which, as a member of the Legislature, he had the courage so earnestly to advocate. But, I ask, ought not this cause to be dear to the heart of every poor and working man? Ought he not to feel it a privilege to have secured to himself and his family one day of rest in seven, when body and mind for awhile may be emancipated from toil and care? I would not have this day looked upon as one of gloom and sadness; but I cannot help thinking that those who desire its due observance, and in their practice carry out their principles, are far more truly the friends of the poor man than those who, on that day, seek the gratification of their own selfish pleasure, indifferent as to the privations caused to others who are required to labour in their service.

The custom of masters paying their workmen on Friday instead of Saturday appears, moreover, to be one which might be followed with advantage to all parties. Having for many years invariably pursued this plan, I can speak with certainty as to its advantage and convenience personally; and I feel sure that the workmen and their families would deprecate a return to the former mode. I need hardly refer to the objectionable plan of paying wages at a public house; thus presenting to workmen a temptation to drunkenness and leading to the ruin of themselves and the misery of their families. In regard to making Friday the pay-day, I have heard it objected that if this practice be adopted, the workmen will spend the next day in idleness or drunkenness; but I can only say that the experience of many years has shown me that under proper regulations such fears are groundless.

In reading an article in your seventh volume, p. 616, headed "Recollections of Peter Nicholson," the author of so many useful practical works, I was struck with the remark that to him "Sunday and week day were alike." He used to say, "that there is no rest to the wicked;" and "he had always gone to work in his studies as a blacksmith on his anvil." He might even in this world have been a happier man, and I doubt not that in life and in death he *would* have been a happier man, had he followed a different course.

I fear I shall be considered too prosy, but still I think this subject is not quite foreign to the objects of this paper; and if the editor should think these remarks worth insertion, he would oblige A CONSTANT READER.

BUILDERS' ESTIMATES.

Circumstances under which a builder is entitled to payment for preparing an estimate.

CLERKENWELL COUNTY COURT.

GILLINGHAM *v.* HOYLES.

This was a plaint to recover 1*l.* 10s. for work and labour in preparing an estimate at the defendant's request for the finishing of certain houses of which the defendant was about to become the purchaser.

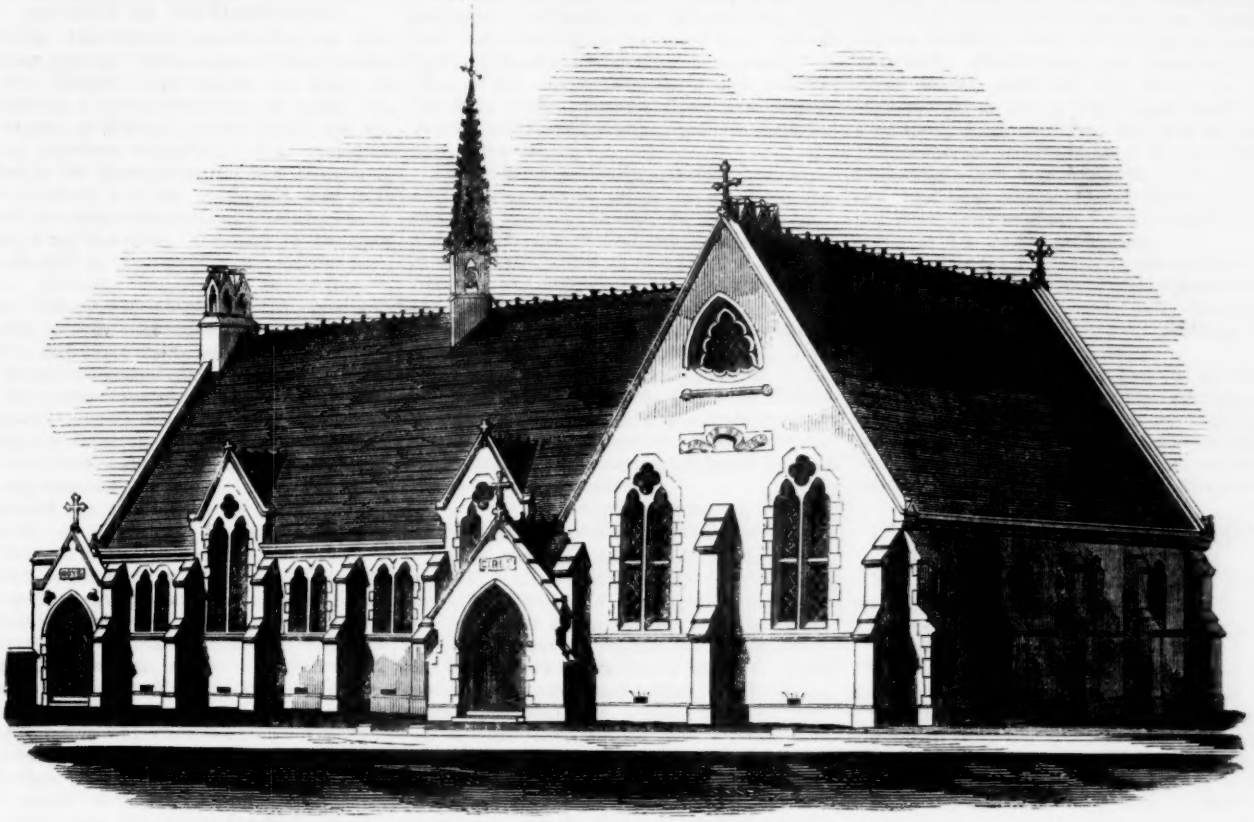
The defendant admitted that he employed the plaintiff to give him a price, but observed that the plaintiff was only to be employed to finish the houses on condition that his was the lowest estimate. Three or four other parties had sent in estimates, and the successful competitor was 5*l.* under the plaintiff. The defendant then drew his Honour's attention to a recent report of a case in THE BUILDER, in which his Honour had decided that the plaintiff who sued for expenses in making out an estimate was not entitled to recover.

His HONOUR observed that the case referred to differed very materially from the present claim. There were circumstances under which a party was not entitled to recover for merely sending in a tender, and the case he had so decided was a case in point, the work having been performed for about half the amount of the plaintiff's estimate. But what were the features of the present case? Here the defendant was purchasing property, and wished to get an opinion as to its value. The plaintiff had supplied him with that information, and was surely entitled to something for his loss of time.

The defendant handed in a letter in which the plaintiff originally claimed only 1*l.* and

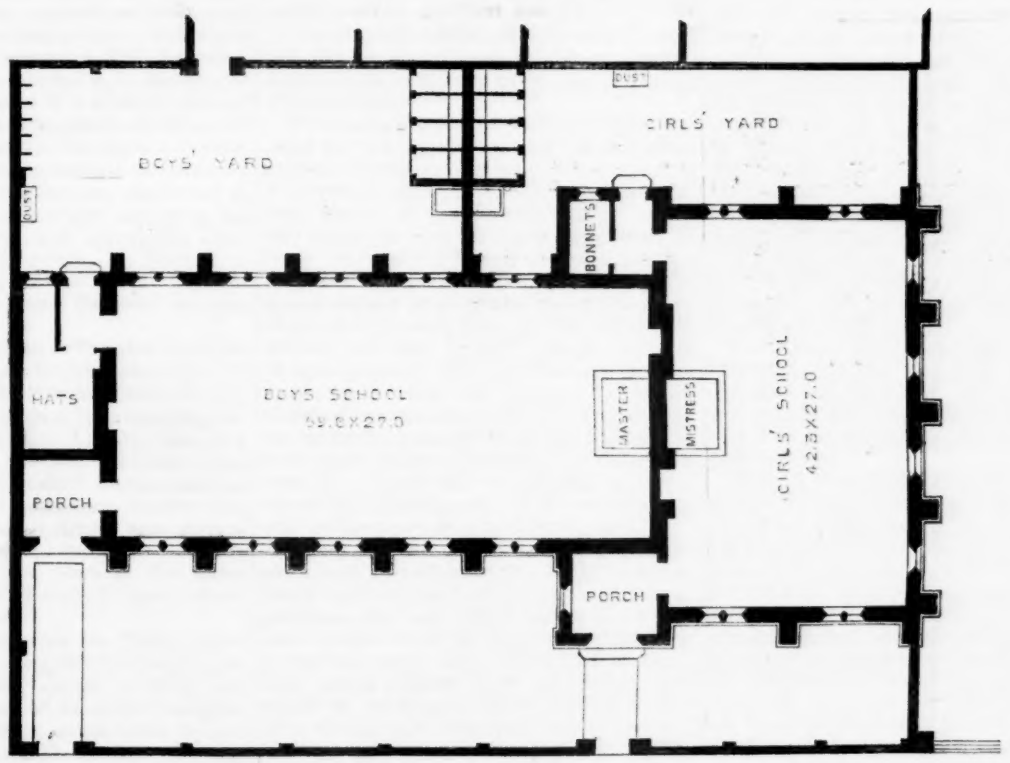
His HONOUR, under these circumstances, gave judgment for that amount.

MORE TRACES OF ANCIENT CIVILIZATION IN AMERICA.—Discoveries of the ruins of an ancient city, two miles long, containing vast quantities of broken, burnt earthenware, arrow points, &c. have been made by the Mormons in the south of Utah territory.



ST. HELEN'S FREE SCHOOLS, PADDINGTON.

Mr. MEYER, Architect.



PLAN.

ST. HELEN'S FREE SCHOOLS, PADDINGTON.

Annexed is a view and plan of (R. C.) free schools, about to be erected at Westbourne Grove North. A portion only of the design is at present being carried out, viz. the Boys' school (59 feet by 27 feet), to be used as a temporary chapel during the erection of the adjoining St. Helen's Church, including the two front porches and the boys' hat closet, forming for the time a sacristy. This portion of the design with the inclosures, exclusive of the belfry, is being executed by Messrs. Smith and Appleford at a cost of 1,200*l*. Mr. Meyer is the architect. The materials used in construction are stone-dressings and brick-facings: the stone is the Box ground, Bath and the facings to principal front are the white bricks from Beaulieu, Hampshire. The roof is open, stained. The belfry is constructed of timber, and covered with lead, and will have crocketted spire, gablets, and pinnacles after two existing examples at Cologne, the one over the Minoritenkirche, the other near to the Rathhaus.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Public Amusements considered as an Educational Agency.—On account of the intention of the Belgian Government to take the initiative in the important item of public improvement, a Brussels paper makes the following judicious remarks:—"A zoological garden in the Brussels capital is a thing very much wanted, but we would not like it to become an affair of shares and a private speculation, and, therefore, it ought to be open gratuitously to the public at certain fixed days. However vague the instruction in natural history, which is obtained by the simple viewing of the collections of a zoological garden, still some utility is attached thereto; and we are convinced that nothing which will lead the masses towards the obtaining of instruction ought to be neglected. Analogous to this are theatres, games, concerts, public pageants, and festivals. The importance of these agencies on the public mind has been recognised by the law-givers and philanthropists of all times. A wise commonwealth has, therefore, not only to *school* a people, to procure them a cheap existence, to enact good hygienic laws, it will also amuse (recreate) the people. Public spectacles are by no means a subject so trifling or futile as is generally thought.

Paris: Schooling Working Men.—We perceive that the Paris press is not behind in taking up this important subject. Amongst the several works lately published, that of M. Audiganne "On the Duties and Rights of the Workers" occupies an honourable place. Our author, who has chosen the form of dialogues, treats also of the employment of children in manufactories. Notices on savings banks, public baths, sanitary measures, &c., fill up the book.

Public Works at Tiflis, Caucasia.—The governor of the Caucasian provinces has caused the construction of a magnificent bridge over the river Civa, near Redut-Kale. Conjointly a theatre has been erected at Tiflis by a German architect, in the Arabic style, the interior of which is ornamented in a superior manner, with the busts of great tragedians of olden and modern time—Euripides, Shakespeare, Goethe, &c. Some time ago an especial manufactory for architectural decoration was established at Tiflis by Prince Woronzoff, for supplying the many new structures with appropriate ornamentation. Another prince, M. Eristoff, is editing a monthly periodical in the Grusinic language, where art and literature are also represented.

A New Museum, Rome.—The plan for a new archæological museum has been sanctioned by Government, and the necessary funds allotted. Besides the collection which has existed for centuries past in the Vatican Library, consisting of monuments of the first Christian eras, another will be established in the Lateran, where the sepulchral monuments discovered in the catacombs, and other similar antiquities of stone and marble, will be deposited. The researches made of late years in the Roma sotteranea, have yielded most of these interesting antiquarian relics.

Mediæval Restoration on the Rhine.—Most persons journeying along this river will recollect the old parochial church of Bilk, near Dusseldorf. It is one of the oldest buildings on the Nether Rhine, consecrated by St. Swibertus in the twelfth century. Having fallen into decay, it will be again restored according to its original character.

Art oscillating westward. — Amongst the progressing painters of the new Dusseldorf school, M. Deutze occupies a prominent place. His picture, "Washington passing the Delaware," attracted much interest, and M. Goupil, the printseller of Paris and New York, purchased it for 8,000 dollars,—a work which M. Deutze had completed in less than six months. One thing led to the other: the artist made a smaller copy to be engraved at Paris, while he emigrates to the States, where print-shops and art-enterprise are making energetic progress.

Enlargement and Erection of Prisons in Prussia.—All the penitentiary establishments of Prussia are so overcrowded, that an enlargement and increase has become absolutely necessary. At Ratibor and Münster the works have been carried on for some time, and the new buildings are near their completion. At Wartenburg also a plan for a new building has been made. Besides these new prisons, those of Halle and Werder will be considerably increased.

Paris School of Design, Architecture, &c.—The distribution of prizes of the *Ecole Nationale Spéciale de Dessin, de Mathématiques, d'Architecture, et de Sculpture*, has taken place in the amphitheatre of the Lyceum Louis le Grand. The following were the prizes given, and their recipients:—Architecture, no first prize; second, H. Raskin. Stone-cutting: E. Train, C. Tiné. Carpentery: C. Tiné. Architectural drawing: H. Raskin, E. Train. Drawing after architectural plates: A. Dunet, V. Henry. Many other prizes were given in ornamentation, composition, sketches after round figures, &c., showing the broad basis of this useful establishment.

ARCHITECTURAL COMPETITIONS.

WHEN people are indisposed to help themselves, they often call out loudly for the assistance of others: the waggoner called upon Jupiter, and it seems architects prefer calling upon Parliament to putting their own shoulders to the work which has to be done. If all men were of the opinion that they, as individuals, could not abstain from a given practice, however reprehensible, because others followed it, I fear little progress would be made towards a higher civilisation. Whenever Parliamentary assistance is sought, I hope it will be for something more than the simple regulation of architectural competitions; and considering how gross is the ignorance which prevails upon the position which architects ought to hold, I think members of the profession may be not unreasonably expected to withhold their countenance from a custom which tends to foster the contempt in which architects are held.

The advocates of competitions seem to overlook the fact that the present system is utterly irreconcilable with the usage the profession wish to maintain.

When people about to build can have prepared for their *especial* use an almost endless number of designs *without any extra cost*, is it surprising that the public foster the present system of competitions under which they appear to have all to win and nothing to lose? Is it not much more surprising that the profession should be willing to work for the merest chance of obtaining the same amount of pay as if the work were put into their hands without any risk at all? People in their charges generally make an allowance for contingencies — where the business is certain charging less than when it is more speculative: but architects make no distinction whatever in their expectations of emolument, whether they work for a *bonâ fide* commission, or for *the chance* of obtaining one. Is this reconcilable with ordinary prudence and forethought?

Seeing that the public *in theory* gain so much from competitions, they ought to remunerate each competitor for his time and trouble, and then one most unjust feature of the present system would be abolished. Had they to pay for every design submitted to them, they would restrict their applications, and would be much more likely maturely to consider the designs submitted than at present; and as people in general value most highly that which they have to pay for, they will think better of the profession—esteem it more highly than they do now. If, in addition to this, the instructions to competitors could be established to constitute a legal contract, in default of adhering to which the advertisers could be mulcted in damages (as I think they ought to be), building committees would feel the responsibilities of their office. As long as the rack is not recognised by the legal practice of this country, I do not think that an Act of Parliament requiring reasons to be assigned for the judgment come to could be worked; but any jury might be instructed so far as to judge from evidence how far the committee had adhered to, or violated their own conditions.

But, in truth, competitions, though a very great evil, are only a part of the injurious effects resulting from the present position of architects; effects which are nearly as prejudicial to the public as they are to the profession. After giving the subject much consideration, I am convinced that it is necessary to incorporate architects, in a manner similar to that by which both branches of the medical and legal professions are embodied; and that this is required as much for the benefit of the public as it is by the profession.

The public are just as ignorant and liable to be imposed upon in architecture as in medicine; whilst the restrictions imposed by the Metropolitan and Local Building Acts are derogatory to a properly qualified architect.

It is much to be regretted that the Institute have not given this subject more mature and practical consideration; but I am convinced that it will force itself upon the attention of the profession, and that ultimately some incorporation will be adopted. JOSEPH BOULT.

THE ARCHÆOLOGICAL SOCIETIES AND BRIDGEWATER CHURCH.

WE have received a letter from the architect under whose direction Bridgewater Church is being restored, in reply to Mr. Warre's note. In it the writer says,—

"A *fair and just* criticism of the works of a professional man cannot reasonably be objected to; but to speak of them in *offensive language*, and to denounce them, moreover, as "desecrations' before a public body of men known to give, at the least, a theoretical study to the subject, and before the world also (apparently, at all events) emanating from so influential a Society, is a mode of proceeding that cannot but be unreservedly condemned as *injurious* and *unjustifiable*, if it may not also be considered 'presumptuous' in the unprofessional man.

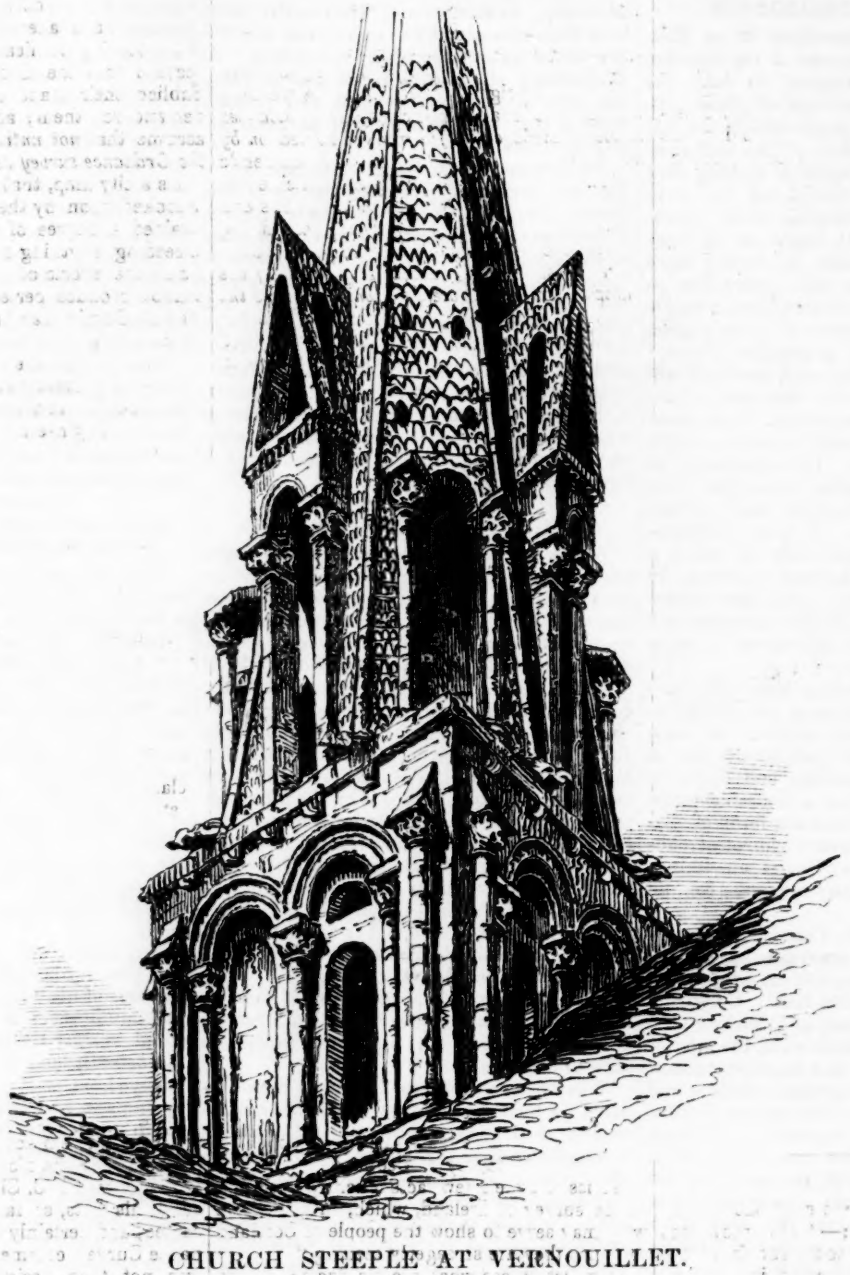
Mr. Warre will possibly be so good as to give your readers, Mr. Editor, the advantage *in this case* of his 'forty years'' experience, and explain to them first the real causes of complaint against the architect, and then describe the *beauties* and the value of those portions removed, as well as the opinions entertained by himself and his Society as to the uses to which they were anciently applied when in the possession of the Romanists; for I should wish this controversy to be in some degree useful, which may be the case, if he would take the opportunity of giving you such an account as shall serve for a record of all that has been removed by the hand of the 'Renovator' from this fine old church.

Do believe, Mr. Editor, that I have some veneration for the *beautiful*, and can also appreciate the wonderful talent so profusely displayed in the works of our forefathers, and that *I do not* esteem my own work before *the good* in theirs.

What I claim both for myself and the profession is this,—that when called upon to restore an ancient building, we shall be allowed the exercise of our judgment in discriminating between the *good and the bad;* and if a necessity exist for rebuilding any portion, and that portion is in itself, or does only contain, an excrescence, that we shall not be compelled to reproduce *the abomination* simply because it *is old or curious*, or existed in a certain position previously, but that we shall be at liberty to call to our aid the whole powers of our mind in taking advantage of every opportunity that presents itself for improving, correcting, or refining the composition so as to produce, as far as circumstances will permit, a beautiful and harmonious whole.

The time is come in which we must bestir and extricate ourselves from *this bondage*, and the degraded position into which we have been thrust, by throwing off the leading-strings which have so long checked and cramped our labours and strivings after *the beautiful.* W. H. BRAKSPEAR."

We cannot admit that, when an architect is called in "*to restore* an ancient building," he is to set about "improving, correcting, and refining the composition." This is what the "beautifiers" of the last century did, and a pretty mess they made of it.



CHURCH STEEPLE AT VERNOUILLET.

CHURCH STEEPLE AT VERNOUILLET.

I TAKE the liberty of sending you rough sketches of the church steeple at Vernouillet, a small village on the Seine, close to the Triel station on the line between Paris and Rouen. It is curious, as carrying out the principles of pointed architecture, without the use of a single pointed arch from the top to the bottom, if we except the arch under the east side, the other three being round. The tower, which is central, is square and low, with two round-headed arches in each face, of late Romanesque character, and engaged shafts near the angles by way of buttresses. From this rises the octagonal spire, having very tall spire-gables on its cardinal faces, the lower part lighted by a round arch, while the upper part, or gable itself, which rests on an enriched string or cornice, has a triangular opening, the upper angle being rounded off. The slopes are also pierced with long round-headed openings. The front of the spire-light has evidently had shafts, the capitals of which still remain. The diagonal faces have each a tall round-headed arch in the slope, flanked by projecting entablatures or abaci, which rest on detached shafts. I could not see whether there had at any time been pinnacles upon them. The effect is not dissimilar from that which might be produced from a composition in the Italian style. I should think the spire belongs to the very beginning of the thirteenth, if not to the twelfth century; but we often find a tower of Romanesque detail resting on a substructure of an advanced Pointed style. The church is cruciform, but the nave has evidently been shortened, only two bays and part of a third remaining. This and the transepts have the round arch. The chancel, which has a flat east end, is pointed. Both the transepts have fine doors: the northern one is pointed, the southern round. The member on the edge of the second order appears somewhat uncommon: it is very bold and effective.

I believe there are many instances in which the spire, probably erected at a later period, is carried out with details harmonizing with the Romanesque work below. Notre Dame at Etampes (between Paris and Orleans), has a fine spire of a somewhat similar character. This is a western one, and the west door and window are pointed. On the angles of the tower are tall pinnacles, composed of three stages of open round arches, crowned with a spire.

At a very short distance from Vernouillet is Verneuil, which has also a central Romanesque tower, but finished with a later addition of plain and poor work, with a gabled roof. The interior of the church presents many points of resemblance to that of the last.

Vaux is an unpretending little cross church, with a packsaddle tower, but has a good semicircular apex of early pointed.

Triel is a very picturesque church externally and internally; mostly in the style answering to our Early Decorated, but with a large apsidal chancel added, of debased Flamboyant. The tower, which is central, is very plain.

The examination of these, with the fine old church of Poissy (which has been well restored) will furnish a pretty brisk day's work.

JOHN LOUIS PETIT.

SCHOOL FOR WORKMEN.

WILL you be good enough to remind your readers that I first published my proposal for founding a School of Art for artist workmen, with a view to their improvement both mentally and manually, and through this of art generally, in your Journal of March the 29th of the present year; and that, in consequence of the interest taken by Lord Shaftesbury in the progress and well-being of the working classes, I addressed a letter to him on the subject, setting forth its advantages, *especially its distinctness* from any thing coming under the head of *charitable institutions*. His lordship's reply acknowledged the interest he felt, and his belief that it would prove most beneficial. I have since addressed the Royal Commissioners on the subject, asking them to give it a share of their attention when the disbursement of the funds of the Exhibition comes under their consideration. But more than this,—I have addressed many members of the architectural profession, who have, but with one single exception, warmly and entirely approved of the

plan, and which they have sanctioned by their offered subscriptions towards a fund I propose to raise for the purpose. I would again urge them, through your Journal, and I trust you will aid me, to come forward in this cause. I think they should be the *first* to found such a school, not only because they are more interested than any other men in improving the workman and his work,—they employing so many,—but also because architecture is the first and foundation of all the other arts, and should take *precedence* of them all.

We should first make the workman able to finish in a masterly and workmanlike manner a fine church, and the houses we live in, and the monuments we leave to our illustrious men, —all works of architecture, and perhaps the only ones that can live; and then think of silks and velvets, of cups and saucers, of fenders and fire-irons: these would, indeed, soon follow: they must, then, be improved.

I have endeavoured to induce, and have partially succeeded in inducing, some of the higher members of the profession to form a committee to carry out and superintend my plan; and if I am fortunate enough to succeed, there will, I am confident from experience, be no difficulty in procuring funds for the school-house, casts of mediæval sculpture, &c. By myself, I fear, I can do but little. If, Sir, the architects do not take up this matter, they will find that some other society of men will; and then, instead of the new, or rather the *first*, school of art established to improve art-workmanship taking the *lead* as an architectural school, and thus infusing a high spirit into art-workmanship, the architect will find himself led by the upholsterer, by the crockery-man, and the ironmonger. Instead of the skill learned in the church and the dwelling-house descending to chairs and tables and fire-irons, he will find the carving on his arm-chair fastened to the church door, the ornament on his fender transferred to the lectern.

The object, then, of such a school as this should be to show to the workman the *very best*, and to teach him the *highest*, and thus to put it in his power to do *all*; and architecture being, as I have said, the first and foundation of all arts, the architect should take the lead, and be the teacher of the workman, *as he was in the old time*. C. B. ALLEN.

RAILWAY JOTTINGS.

IN an article on the wonders of the railway system, the *Times* says:—"We know not what artifices of language could add force to a simple statement which appeared in our impression of Saturday last. The system of railway communication in these islands has advanced to such a point that every day the locomotive engine passes over a distance nearly four-and-a-half times the circumference of the globe. The following brief summary will perhaps serve as the best preface to the few remarks we propose to offer on the present position of our railway system:—Number of engines working on the railways in 1850, 2,426: quantity of coke consumed by them within the year (tons), 627,526; quantity of coal consumed, 896,466; total distance run within the year (miles), 40,161,850; average distance run per day (miles), 110,333. In the year 1850 there were in all 6,464 miles of railway under traffic. On the 1st of January, 1849, when as yet only 5,079 miles of iron road had been opened, there had been of capital expended upon their construction 205,160,000*l.* and at the same period the total receipts for the preceding six months amounted to 5,744,265*l.*, or 5·6 per cent. on capital expended. Allowing 40 per cent. for working expenses, the division of these receipts will stand at 2·2 for expenses, and 3·4 for profits.——The works of the Great Northern in the neighbourhood of Grantham are rapidly progressing. The Peascliffe tunnel is almost finished, and the tip from the Spittlegate-hill cutting has nearly approached the crossing of the Great North-road below Little Gonerby. The station at Spittlegate Church is being covered in as far as the outside buildings, waiting-rooms, &c., are concerned.——The *Morning Chronicle* gives an account of the first public trial of Captain Addison's day and night signal, which was made on the North Kent line. "The design," it says, "is intelligible enough. Instead of having but one guard, there are here two,—one in the immediate vicinity of the engine; the other, as usual, behind. The signal which gives the warning to these functionaries is so situated and *attached to every carriage* that *it may be turned on by any person* of ordinary sense at a moment's notice. It is placed immediately outside the carriage, with which it is connected at one end by a spring, at the other by a latch, restraining its tendency to shoot out; and it is the removal of this latch, impossible except by the *manipulation of a passenger, which permits the notice of danger to fly out* and apprise the proper functionary that some accident has happened, or is about to happen [or is feared or fancied or made-believe to be about to happen, or, it may be, rather, in most cases, to apprise the proper functionary that some urchin inside, "of ordinary sense," had found out the way to "lift the latch," or "pull the trigger," and set off the "stunning" firework], which will render the immediate stoppage of the train desirable. The red placard was visible at once by daylight to the vigilant observer; but at night, on the return, when almost a positive illumination was shown, there was still less doubt about the utility of the design. The pulling of a trigger, differing in no particular from that of a gun, let off a percussion cap, which shrouded a mass of combustible matter; and the result was a bright and brilliant flame, visible for miles, and enduring for at least five minutes." Can it be possible that it is for a moment contemplated to put it thus in the power of every nervous old woman of either sex, of every mischievous or curious urchin, and of every tipsy fast gent up to a lark, so to frighten a whole train full of passengers and arrest their progress at will? It surely cannot.

THE SURVEY OF IRELAND AND SCOTLAND.

ALLOW me to refer to an article which appeared in your number published on the 30th ult., under the above head, signed "John S. Sloane."

The writer commences his philippic as follows:—"At a time when so much is being said about the survey of Scotland, it may not be amiss to state a few facts touching the Ordnance survey of Ireland, which, in a humble way, may serve to show the people of Scotland for what they are so eagerly seeking."

Now, let us see what are his *facts*: for the sake of brevity I will refer to that respecting the survey of the city of Dublin, which is a fair specimen of all the others. It is as follows: "The much-boasted survey of Dublin, plotted to a scale of 60 inches to the mile, one would think ought to be correct from the number of years they have been engaged at it (since 1837), and the quantity of red coats who have innumerable times paraded the streets, apparently revising it; and yet there is not a street without errors, not the less annoying because in some cases trivial."

There were two maps drawn of the survey of the city of Dublin, one on the general scale of 6 inches to the mile, the other upon the scale adopted for all the large towns, namely, 5 feet to the mile: both of these maps were completed, and in the hands of the engravers, in 1840. Since that time they have been published, and I believe every sheet bears the date of publication upon it. There is an immense demand for these maps, and would it not be absurd to expect that, so long as the demand continues, the Ordnance would discharge their engravers and cease to supply them, when it is, in fact, a part of the Ordnance design, that the profits arising from the sale of the maps shall ultimately cover the expense of the survey? indeed, it may even turn out to be a paying speculation, for I understand it is contemplated to publish the maps upon different scales, reduced from that of six inches to the mile. I have stated that every sheet bears the date of publication; and so long as the Ordnance continue to issue series after series of new impressions, and, as they will have them accurate up to the date of issue, they must necessarily embrace the alterations and additions that may have taken place on the ground since the preceding publication,—may we not, then, assume that the Ordnance will continue to publish their maps so long as they have a demand for them; and may we not likewise assume that *not until the demand ceases will the Ordnance survey be finished?*

As a city map, that of Dublin has been and is looked upon by the best judges as having attained a degree of accuracy and perfection exceeding anything of the kind in existence. As all the efforts of human genius, however, cannot produce perfection, so the Ordnance map of Dublin may have its faults and discrepancies.

The survey of the whole of Ireland—that is to say, the draft-plans—was finished in the years 1841-2; and one of the senior officers of the Royal Engineers, with his staff of assistants, civil and military, was then appointed to conduct the survey of the six northern counties of England, upon the same scale as that upon which Ireland was surveyed. The survey of Lancashire was completed in 1846, and in the following year the engraved impressions were in course of circulation. The engraved map of the whole county is now complete; and, judging from the sale it has had, it may be expected that ere long we shall have another and probably an improved impression of it.

Respecting the correctness of the Ordnance survey generally, it is in the hands of the public, and will speak for itself. I have had an extensive practical knowledge of it, both in Ireland and England, and I would not hesitate to stake my character as a surveyor upon the fact that it is at once as accurate, as complete, and as well finished as any survey can be: indeed, it is an advance in the art: neither labour nor expense has been spared upon it, and *labor omnia vincit* is true to a proverb.

It must be recollected that I am speaking of a scale the smallest area on which calculated with accuracy—that is to say, the smallest area the Ordnance profess to give upon it—is that of a township. No honest surveyor would profess to compute *accurate areas* of fields from it: for abstract purposes it may nevertheless be sufficiently accurate; but if private surveyors will make illegitimate uses of it, the blame must rest with them.

Respecting the district in the north of Ireland of which J. S. Sloane speaks, I am free to admit his facts, so far as they are fairly represented, and certainly that is not far. The Ordnance Survey commenced in the north, and it was not then designed to embrace all the fences and minor details, but to be a survey sufficient for the valuation of the country, and that would admit of the hills being shaded upon it—somewhat in the manner of the 2-inch map of England. When the survey of Ireland was reported finished, in 1842, a staff of surveyors was sent to the north to supply the detail that had been omitted, and from what I have been told, I believe it to have been finished long since. As to the fact that for railway purposes it was found necessary to survey the houses, there is nothing in it: assuming it to be a proof of the inaccuracy of the Ordnance survey is fallacious, for however accurate it might be, railway surveyors would be obliged to show an enlarged plan in such cases, for the sake of admitting the reference numbers being distinctly and legibly written upon the spaces they represented. W. M.

CATTLE BRIDGES.—Mr. Matthew, of Caermarthenshire, has devised a simple mode of constructing bridges to enable cattle and sheep to pass wide ditches. They consist of poles, five inches square, and then sawn from corner to corner, forming two triangular pieces. These are joined by a number of common iron butt hinges, according to their length, and have a handle at each end to open them: thus, when open, one of these forms a safe and easy footbridge, about fourteen inches wide, but when shut presents an angular projection, over which neither cattle nor sheep can pass; and, when shut, one rail forms a protection to the other from the effects of weather.

ARCHITECTURAL AND OTHER NEWS IN IRELAND.

The foundation-stone of a new town-hall was laid at Portadown last month.

A new custom-house is to be erected at Belfast, on the site now occupied by the harbour-office. The proposed building will contain offices for post-office and excise purposes.

The Commissioners of Public Works have expended, up to the present time, on the Ferbain drainage, a sum of 29,751*l.*, and a sum of 27,315*l.* is required to complete it, although the original estimate was only 47,000*l.*

The foundation-stone of a new Roman Catholic church has been laid at Ballinroke.

Sundry works, consisting of the erection of a new board-room, &c. are being executed at the workhouse of Abbeyleix, under the direction of the Poor-law Commissioners' architect.

The restoration of the cathedral of St. Canice, at Kilkenny, is progressing. The four great pillars and arches supporting the belfry tower are being re-decorated, and the whitewash with which they were covered for nearly two centuries is being removed: several other restorations are being effected.

The line between Strabane and Newtownstewart, on the Londonderry and Enniskillen Railway, is in a forward state, and the works are expected to be shortly complete.

The parish church of Grean is being enlarged, and a new church is to be erected in the parish of Doon.

A new Presbyterian church is to be built at Belfast, on the Crumlin road.

The Committee of Natural History of the Royal Dublin Society advertised "*the munificent*" premium of ten guineas to be given for the best set of plans for a building, containing extended museum accommodation, and to cost 2,500*l.* Although several designs were received by them for the same on the 1st of "May" last, no decision has been *yet* come to.

The exhibition of the Royal Hibernian Academy at Dublin has been open since July. The collection of paintings is far inferior in number to the preceding years. In the antique room the display of sculpture is greatly improved. The architectural drawings are extremely limited, and display few of any importance. The exhibition is now open to the working classes at the reduced rate of one penny.

PALACES AND PARKS OPEN TO THE PARISIAN PUBLIC.

We compile the following list from one given in the French journals, assenting at the same time to the belief that there is no other city in Europe so well provided with places for public amusement, recreation, and instruction,—terms which are nearly synonymous, or ought to be so.

Fontainebleau.—Palace built by Primaticc, and the successive abode of Francis I., Henry IV., Louis XIV., Napoleon, &c.; possesses a gallery, park, &c.

Compiegne.—Palace built by Francis I., furnished by Napoleon. Great *berceau* in the park.

Auteuil.—Once inhabited by Racine, Molière, Franklin, Helvætius, &c.

Chantilly.—Palace, park, theatre, &c.

La Malmaison.—Inhabited by Napoleon and Josephine, who established here hot-houses, celebrated in their time. It was here that our favourite *Hortensia* plants were first cultivated.

Marly.—Palace and park of Louis XIV. Famous water-works, where 225 sucking and forcing pumps reach the river and raise the water 167 mètres above its level: aqueduct 1,000 mètres long, leading the water to the Versailles water-works. Steam-pump raising the water 500 mètres.

Mais n-sur-Seine.—Built by Mansard, with a collection of curiosities of the times of Charles IX. It belonged successively to Napoleon, Lannes, and Lafitte, the latter of whom converted the park into a *village-modèle* (model village for the working classes). Distance, twenty-five minutes from Paris.

Montmorency.—The finest forest-park near Paris. J. J. Rousseau lived and wrote here.

Meudon.—Palace built by Philibert de Lormes, renovated by Louis XIV. Immense terrace on the Seine, whence Paris and 186 villages are to be seen. Rabelais was parson of Meudon.

Saint Cloud.—Palace and park. Henry III. died here by the dagger of a monk. The palace is rich in art-works, the park most picturesque.

Sèvres.—Great manufactory of porcelain.

Versailles.—World-known; perhaps the finest *ensemble* of architecture and *parking* in the known world. The two smaller palaces of Trianon.

Sceaux.—The garden of the ancient château built by Colbert.

Saint Germain.—Ruins of the *Château Neuf*, built by Henry IV.: James II. of England died there; since Louis le Gros the abode of thirty kings and queens of divers names. The ancient buildings are interesting specimens of the art-style of six centuries.

Le Mont Valérien.—One of the oldest sites of Paris, probably built *on* before the Christian Era.

Rembouillet.—The ancient château with its fine high tower: here died Francis I.: park and gardens laid out by Le Nôtre.

Neuilly.—Ruins of the Orleans palaces, &c.

Miscellanea.

Casting Iron Pipes.—The *Glasgow Mail* notices the mode of casting pipes in use at the foundry of Messrs. D. Y. Stewart and Co. of St. Rollox. The writer says that the foundry turns out twenty pipes in a day, each 12 feet long and 44 inches bore. With the exception of drying, the whole process of moulding and casting is gone through in half an hour. The malleable iron case, on its railway carriage, is placed under the moulding machine: the pipe is completely moulded in a period of three minutes—the faucet formed, and the running number impressed: the whole is then transferred to the hot air stove, thence carried round to the cupola, where the core is inserted, and the molten metal, at a delicately determined degree of temperature, is introduced from an enormous cauldron, suspended from a powerful crane. While the metal is being poured in, myriads of the most brilliant and fantastic scintillations are often evolved. Immediately afterwards, and at the critical moment of incipient contraction and setting of the metal, the core is started by means of a hydraulic press, and the huge tube, every part of which is of equal thickness and strength, is carried away and deposited in the yard for cooling, dressing, and testing. Some portion of the process—the writer does not state what—is the invention of the managing partner.

Materials of Old House of Commons.—Messrs. Eversfield and Horne, as will have been seen from the daily newspapers, have had the selling of the materials and fittings of the old House of Commons, the Painted Chamber, &c. The whole product was 1,782*l.* It may be of interest to note a few of the particulars. The Portland stone, ashlar, cornice, string course, dressings, &c., of the building, corner of St. Margaret-street, up to a mark, including two windows with Ionic columns, brought 39*l.* The copper flat, 850 feet superficial, in the offices facing Old Palace-yard, 42*l.* The open panel ceiling of the House of Commons, 11*l.* The wainscot canopy for the Speaker's chair, 10*l.* The brick and stone-work of the north side and ends of the Painted Chamber and arches under, including several ancient Gothic stone windows, 50*l.*

The Westminster-bridge-road.—The dangerous state of the carriage-way near the foot of Westminster-bridge, on the Surrey side, occasioned by the breaking in of an old sewer, a few weeks since, has been made good. The loose soil has been withdrawn, and the aperture filled in with rubbish and concrete. The course of the drain has been diverted, so as to form a junction with the recently-constructed sewer which intersects the Westminster-road from Stangate-street across to Pedlar's-acre.

Scrapers and Signs.—There is a subject that time after time I have intended to write to you about, hoping you would give it your influence to set it to rights. The subject is foot or shoe-scrapers: you see I do not soar very high in my cogitations. Being also a little short-sighted, my meditations on the subject lead me to bless these foot-scrapers a thousand times, the more so that I know there is a remedy for the evil. When recently in Hamburgh, I was delighted with the substitute they have there for the really inefficient, after a little use, and dangerous thing they have in this country. At each end of the door-step, and on a level with it, they have a grating, which not only is far more serviceable, but allows the dirt to fall through into a convenient space opening to the front, cut out on purpose, and which admits of its daily and easy removal. There is another subject I also think might suggest a passing observation from you. I regret it is not much more elevated than the other. I allude to sign-boards, that is, as far as they refer to the numerous large new buildings being run up in all directions for offices. Sometimes the builder leaves a narrow space for the names of the occupiers, or a board is put up for this purpose, but it is almost always so narrow that there is no room for making a separate column for designations: even when the name is long, it has to occupy two lines. Now we keep our books as much as possible on the column principle, to save time and trouble, and I do not see why it should not be the same with signs or sign-boards. Names and designations are often so jumbled together in a long list, that it is difficult and time-occupying to find out a required address. This, however, is a small matter compared to the foot-scrapers: I do hope you will give them a kick off the face of the earth.—A Liverpoolian.

Metropolitan Commission of Sewers.—A special court was held on Friday, in last week; Mr. E. Lawes in the chair, and Mr. R. Stephenson, Captain Dawson, and Mr. Rendell, commissioners, also present. The chairman stated, that a great number of applications and memorials had been presented, from which he had made a selection; the first of which to be brought under notice was a memorial, complaining of the nuisance from an open sewer at Temple Bar Pier, and requesting that it might be arched over. The proprietors of the Chinese Junk had also memorialised them to the same effect. A discussion then ensued as to the propriety of covering the sewer to low-water mark, which Mr. Stephenson and Mr. Rendell recommended, Captain Dawson suggesting a special rate to defray the expense. The chairman stated that the sewer drained a whole district, and that the district rates were liable to the cost. The surveyor, he said, had reported that this was not so great a nuisance as many of the other outlets to the Thames. He was of opinion that if covered over, the expense would be thrown away as soon as the general plan of drainage was adopted. The estimate for covering over the sewer with planking would be about 450*l.* Mr. Rendell and Mr. Stephenson thought the propriety of incurring the expense would depend upon the time the nuisance would be likely to be endured. If the prospect of the adoption of the general plan was distant, it might be expedient to abate a great nuisance in the meantime. The matter was ordered to be further reported on at next court. Some other complaints were then heard and works ordered, warrants signed, and rates of 3d. in the pound on the Wandle, Fulham, and Hammersmith districts ordered.

West Suffolk Archæological Institute.—On Thursday week, the members and friends of this society paid a visit to Ely Cathedral. The attendance consisted principally of the clergy and their families from Suffolk: there were not many members present from Cambridge. The Very Rev. the Dean, and the architect, attended the party from the nave to the lantern, and through the cathedral, explaining to the visitors every object of antiquarian and general interest, and the late improvements made in the edifice. In the afternoon the palace was thrown open, and the bishop presided at dinner.

THE ADELPHI THEATRE.—The new drama here, called "The Queen's Secret, or the Iron Mask," has three pretty scenes,—an inn on the borders of the Forest of Fontainebleau; the Chateau of Fontainebleau (that rendezvous of palaces); and the Monastery of Lerins, in the Island of St. Honorat. The piece, founded on a well-known mysterious passage in French history, is mainly dependant on the acting of Madame Celeste and Mr. Webster, well supported, however, by Miss Woolgar and Paul Bedford. The versatility of Mr. Webster as an actor is very extraordinary: he can play anything,—from Richard III. to harlequin: the rough countryman, the West-end fop, the stern old Puritan, the Paris *flaneur*, find in him an equally efficient representative.

THE LONGEST SHIP. BEATEN AGAIN.—Under the heading "The Longest Ship in the World" our contemporaries have mentioned that Messrs. Mare, shipbuilders, of Blackwall, and Messrs. Penn, of Greenwich, engineers, have taken a contract to construct, for the Peninsular and Oriental Steam Navigation Company, an iron steam-ship, of the following dimensions and power, viz.:—Length between the perpendiculars, 325 feet; breadth of beam, 43 feet; depth, 32 feet. She will measure about 3,000 tons, and will be propelled by four engines of the collective working power of 1,200 horses; will have feathering paddle-wheels, and a guaranteed average speed of 14 knots, equal to 16 statute miles per hour. Some idea may be formed of the size of this gigantic vessel when it is compared with that of some of the existing steam-ships most celebrated for their large size. She will be 51 feet longer than the *Great Britain*; 60 feet longer than the largest of the Cunard or North American mail steamers, the *Asia* and *Africa*; 40 feet longer than the large steamers, such as the *Panama, Oronoco*, &c., now constructing for the Royal Mail Company; and 100 feet longer, and 500 tons larger, than the *Caledonia*, first-rate, of 120 guns. Strange to say, however, the Americans have beaten this by anticipation. The steamer *Eclipse*, now on the stocks at Louisville, Kentucky, is to be three hundred and *fifty-nine* feet in length. She is to have eight of the largest sized boilers, and her water wheel will be 42 feet in diameter. She will be completed in the fall.

SOLID GAS.—Baron Liebig speaks of the solidification of gas as one of the greatest wants of the age. Coal does contain an immense quantity of it in a solid state, and yields abundance of it in the fluid form of naphtha; but coal may rather be said to yield the gas than even to contain it, far less to be it in a solid state. Mr. Young, of Manchester, however, is said to have discovered a process by which, besides liquid oil or naphtha, he procures the solid paraffine—a substance which, it is said, had never before been produced from coal, though wood has heretofore yielded it. This paraffine, when heated, becomes olefiant gas—the illuminating principle of ordinary gas light,—so that it is in reality the solid gas required. The essential point of cost may perhaps thus be brought within the limits of practical purposes. The process is said to be quite simple. The coal introduced at one end of a retort is screwed out in the form of coke at the other, while the liquid and solid products of distillation come away from a separate opening. If successfully carried out on a large scale, Mr. Young's process will yield important results, and among these may be specified the economical production of coke for our railways as well as of gas for our dwellings.

MODERN BALLOONING.—In lately reprobating the stupid abuses, mountebankism, and sometimes something worse, into which ballooning has fallen, we scarcely expected to be supported so soon by one of the "balloonatics" themselves, as he very significantly dubs them. A young artist, one of a party of four, whom we happened to see tumbling down into Fulham in a flimsy article, to what appeared, to themselves as well as to all who witnessed the exhibition, to be certain destruction, cleverly and coolly obviated, however, the very next moment, by one of the exhibitors, who converted the collapsing bag into a parachute by cutting away the attachments of the neck beneath,—describing the circumstances in the daily papers, says:—"I am too sensible of the mischievous folly of which I and my brother balloonatics have been guilty, to let this opportunity pass without recording my humble, but solemn protest against the whole system of ballooning as at present existing. If any beneficial result was to be looked for—if any scientific ends were to be gained by balloon ascents, I should be silent; but it is madness and folly to permit any enthusiast or any charlatan who may be the possessor of a silk bag which he can afford to fill with coal gas, to risk his own life among the clouds, as well as those of the madcaps who are with him, for the amusement of some hundreds of *gobemouches* who have paid a shilling a-head to see their fellow-creatures commit constructive suicide. When some personage more important than a poor caricaturist has been killed in a balloon, the attention of the authorities will perhaps be drawn to the subject, and this wanton trifling with life be perhaps put a stop to, like any other dangerous nuisance."

FALL OF A FLOOR AT BALLYCLARE.—The flooring of a large loft in an old paper-mill here gave way last week, while upwards of 500 persons were assembled at a lecture on "electro-biology," and three lives were lost in consequence, and twenty-six persons seriously injured. The flooring consisted of heavy 3-inch planks, running transversely to the direction of the beam, supported at one end by the side-walls where it was let into the stone-work, and at the other end by the beam, along the top of which the planks met from either side, and to which they were fastened by long iron bolts. The accident was occasioned by the breaking of the beam exactly in the centre, at a moment when a rush had been made thither to witness some experiment, and when it gave away, the flooring shelved downwards from both sides, sliding, as it were, those who stood upon it into the store below. In some places the planks prized up the masonry into which they were inserted, and in one spot a considerable mass of stone and brickwork was detached, which, falling upon the living heap below, caused the most fatal of the injuries recorded. Such cases—and this is not the first of late, even in Ireland—show the necessity of inquiry and examination as to the sufficiency of places of public resort to sustain the probable pressure under every contingency. It is the duty of local authorities even more than of lecturers to see to this.

COLOUR-BOXES AND DRAWING INSTRUMENTS.—The Council of the Society of Arts, wishing still further to prosecute their efforts in bringing a knowledge of drawing within the reach of artisans and others, and feeling convinced that the present high price of the necessary materials is a serious drawback to the attainment of that end, have determined to present the Society's large medal to the person who shall produce the box having the greatest number of the best colours for general use, and brushes, which may be sold retail for One Shilling. The Council will be prepared to purchase not less than one thousand of the successful boxes. The Council further offer the Society's large medal for the best and cheapest set of "drawing instruments," and will be prepared to purchase not less than one hundred sets of the successful case.

THE STATUE IN CAVENDISH-SQUARE TO LORD GEORGE BENTINCK.—On Saturday last, at the vestry of St. Marylebone, a report was presented from a committee appointed, as to the making of two crossings from Holles-street to the garden in the centre of Cavendish-square, that the present crossing and gate might be removed from the centre, so as not to interfere with the statue of the late Lord George Bentinck now about to be erected there,—the inhabitants of the square or parties applying for the change agreeing to pay the cost of alteration themselves. The report was adopted.

WORSLEY HALL.—An illustration of Worsley Hall, at which her Majesty means to rest on her visit to Manchester on 10th proximo, will be found in the eighth volume of THE BUILDER, page 270.

THE SUB-MARINE TELEGRAPH.—The line, as now being manufactured, is described as consisting of four copper wires of the thickness of an ordinary bellwire, cased in gutta percha, and twined with a corresponding number of hempen strands steeped in a mixture of tar and tallow into a rope of about an inch diameter. Another strand similarly prepared is wound transversely round this, and finally ten wires of galvanized iron, about a third of an inch thick, are twined round this central core and form a solid and at the same time flexible casing. The whole, when thus completed, has the appearance of an ordinary 4½-inch metallic cable. A huge coil is being formed in one continuous piece at the rate of about 1½ mile a day, and will finally attain the length of 24 miles.

THE EARTHQUAKE AT NAPLES.—An *Official Gazette* of the two Sicilies gives a detailed account of the disasters caused throughout the kingdom of Naples by the earthquake of 14th ult. The Principato Ulteriore was severely visited, particularly in the districts of Carbonara, Lacedonia, Galitri, and Monteverde. At Bovino, Ascoli, Lucera, and Sanseverio, and other places of Capitanata, most of the houses were seriously injured. In the province of Bari, the town of Canosa has suffered most: 376 houses are in a tottering condition: two churches, the town-house, and the arch of Diomedes, have been considerably damaged. But the scourge was most severely felt in the province of Basilicata, its effects being chiefly concentrated around the Vultore, where the motion lasted sixty seconds; and, according to the account, it had not quite ceased by last advices. One-half of Venosa had been destroyed. At Rionero, fifty-two dead bodies had been dug out of ruins on 16th; at Barile 100; and the town of Melfi, containing 10,000 inhabitants, is a heap of ruins: 700 persons lost their lives there, and upwards of 200 are severely bruised and wounded. The village of Barile actually disappeared. The Neapolitan government have given directions for the prompt reconstruction of the fallen houses, and advanced sums for the purpose. The houses that are in a tottering condition, but may still be saved, have been propped up: those that threaten ruin are in course of demolition. Meantime barracks have been constructed for the houseless population, and four government engineers are directing the labours now in progress for repairing the immense damage done.

THE TEMPLE CHURCH.—On going to visit the Temple Church the other day with some country friends, says the *John Bull*, we were much disappointed at finding the door closed. We now gather, however, from a correspondent of the *Morning Chronicle*, that a sort of half welcome is given after all to those who are fortunate enough to be initiated in the "Open Sesame" of this ancient abode of the Knights Templars, which consists in simply knocking at the door. It is to be regretted that the solution of the mystery of admission is not announced by a slip of paper on the door inscribed with the word "knock."

VENETIAN BLINDS.—Cast-iron is said to be coming into use for common Venetian blinds. We have sometimes thought that good, stout, tinned iron might be economically cut into slips for such blinds. The *Mechanic's Magazine* says, that a Mr. Burt makes laths of iron or metal, embossed, corrugated, or simply curved, perforated and painted or japanned, according to taste. He also claims an arrangement for raising and lowering such blinds, and preserving the parallelism of the laths, without the multiplicity of cords generally employed.

WAGES IN SOUTH AUSTRALIA.—Return showing average wages of mechanics and others in South Australia, for quarter ending 31st December, 1850.—Blacksmiths, 9s. per day, without board or lodging; bricklayers, 7s. to 7s. 6d., ditto; brickmakers, per 1,000, 10s. to 13s., ditto; carriage makers, 7s. per day, ditto; coopers, 6s. to 7s., ditto; day labourers, 4s. per day, ditto; wheelwrights, 6s. to 6s. 6d., ditto; miners, tributers, according to agreement; boys, 6d. to 1s., with board and lodging; shipwrights, 8s. to 9s. per day, without board or lodging.—*Adelaide Observer*.

ARCHITECTURAL AND OTHER NEWS IN IRELAND.

THE foundation-stone of a new town-hall was laid at Portadown last month.

A new custom-house is to be erected at Belfast, on the site now occupied by the harbour-office. The proposed building will contain offices for post-office and excise purposes.

The Commissioners of Public Works have expended, up to the present time, on the Ferbain drainage, a sum of 29,751*l.*, and a sum of 27,315*l.* is required to complete it, although the original estimate was only 47,000*l.*

The foundation-stone of a new Roman Catholic church has been laid at Ballinroke.

Sundry works, consisting of the erection of a new board-room, &c. are being executed at the workhouse of Abbeyleix, under the direction of the Poor-law Commissioners' architect.

The restoration of the cathedral of St. Canice, at Kilkenny, is progressing. The four great pillars and arches supporting the belfry tower are being re-decorated, and the whitewash with which they were covered for nearly two centuries is being removed: several other restorations are being effected.

The line between Strabane and Newtownstewart, on the Londonderry and Enniskillen Railway, is in a forward state, and the works are expected to be shortly complete.

The parish church of Grean is being enlarged, and a new church is to be erected in the parish of Doon.

A new Presbyterian church is to be built at Belfast, on the Crumlin road.

The Committee of Natural History of the Royal Dublin Society advertised "*the munificent*" premium of ten guineas to be given for the best set of plans for a building, containing extended museum accommodation, and to cost 2,500*l.* Although several designs were received by them for the same on the 1st of "May" last, no decision has been *yet* come to.

The exhibition of the Royal Hibernian Academy at Dublin has been open since July. The collection of paintings is far inferior in number to the preceding years. In the antique room the display of sculpture is greatly improved. The architectural drawings are extremely limited, and display few of any importance. The exhibition is now open to the working classes at the reduced rate of one penny.

PALACES AND PARKS OPEN TO THE PARISIAN PUBLIC.

WE compile the following list from one given in the French journals, assenting at the same time to the belief that there is no other city in Europe so well provided with places for public amusement, recreation, and instruction,—terms which are nearly synonymous, or ought to be so.

Fontainebleau.—Palace built by Primatice, and the successive abode of Francis I., Henry IV., Louis XIV., Napoleon, &c.; possesses a gallery, park, &c.

Compiegne.—Palace built by Francis I., furnished by Napoleon. Great *bercean* in the park.

Auteuil.—Once inhabited by Racine, Molière, Franklin, Helvætius, &c.

Chantilly.—Palace, park, theatre, &c.

La Malmaison.—Inhabited by Napoleon and Josephine, who established here hot-houses, celebrated in their time. It was here that our favourite *Hortensia* plants were first cultivated.

Marly.—Palace and park of Louis XIV. Famous water-works, where 225 sucking and forcing pumps reach the river and raise the water 167 mètres above its level: aqueduct 1,000 mètres long, leading the water to the Versailles water-works. Steam-pump raising the water 500 mètres.

Mais n-sur-Seine.—Built by Mansard, with a collection of curiosities of the times of Charles IX. It belonged successively to Napoleon, Lannes, and Lafitte, the latter of whom converted the park into a *village-modèle* (model village for the working classes). Distance, twenty-five minutes from Paris.

Montmorency.—The finest forest-park near Paris. J. J. Rousseau lived and wrote here.

Meudon.—Palace built by Philibert de Lormes, renovated by Louis XIV. Immense terrace on the Seine, whence Paris and 186 villages are to be seen. Rabelais was parson of Meudon.

Saint Cloud.—Palace and park. Henry III. died here by the dagger of a monk. The palace is rich in art-works, the park most picturesque.

Sèvres.—Great manufactory of porcelain.

Versailles.—World-known; perhaps the finest *ensemble* of architecture and *parking* in the known world. The two smaller palaces of Trianon.

Sceaux.—The garden of the ancient château built by Colbert.

Saint Germain.—Ruins of he *Château Neuf*, built by Henry IV.: James II. of England died there; since Louis le Gros the abode of thirty kings and queens of divers names. The ancient buildings are interesting specimens of the art-style of six centuries.

Le Mont Valérien.—One of the oldest sites of Paris, probably built on before the Christian Era.

Rembouillet.—The ancient château with its fine high tower: here died Francis I.: park and gardens laid out by Le Nôtre.

Neuilly.—Ruins of the Orleans palaces, &c.

Miscellanea.

CASTING IRON PIPES.—The *Glasgow Mail* notices the mode of casting pipes in use at the foundry of Messrs. D. Y. Stewart and Co. of St. Rollox. The writer says that the foundry turns out twenty pipes in a day, each 12 feet long and 44 inches bore. With the exception of drying, the whole process of moulding and casting is gone through in half an hour. The malleable iron case, on its railway carriage, is placed under the moulding machine: the pipe is completely moulded in a period of three minutes—the faucet formed, and the running number impressed: the whole is then transferred to the hot air stove, thence carried round to the cupola, where the core is inserted, and the molten metal, at a delicately determined degree of temperature, is introduced from an enormous cauldron, suspended from a powerful crane. While the metal is being poured in, myriads of the most brilliant and fantastic scintillations are often evolved. Immediately afterwards, and at the critical moment of incipient contraction and setting of the metal, the core is started by means of a hydraulic press, and the huge tube, every part of which is of equal thickness and strength, is carried away and deposited in the yard for cooling, dressing, and testing. Some portion of the process—the writer does not state what—is the invention of the managing partner.

MATERIALS OF OLD HOUSE OF COMMONS.—Messrs. Eversfield and Horne, as will have been seen from the daily newspapers, have had the selling of the materials and fittings of the old House of Commons, the Painted Chamber, &c. The whole product was 1,782*l.* It may be of interest to note a few of the particulars. The Portland stone, ashlar, cornice, string course, dressings, &c., of the building, corner of St. Margaret-street, up to a mark, including two windows with Ionic columns, brought 39*l.* The copper flat, 850 feet superficial, in the offices facing Old Palace-yard, 42*l.* The open panel ceiling of the House of Commons, 11*l.* The wainscot canopy for the Speaker's chair, 10*l.* The brick and stone-work of the north side and ends of the Painted Chamber and arches under, including several ancient Gothic stone windows, 50*l.*

THE WESTMINSTER-BRIDGE-ROAD.—The dangerous state of the carriage-way near the foot of Westminster-bridge, on the Surrey side, occasioned by the breaking in of an old sewer, a few weeks since, has been made good. The loose soil has been withdrawn, and the aperture filled in with rubbish and concrete. The course of the drain has been diverted, so as to form a junction with the recently-constructed sewer which intersects the Westminster-road from Stangate-street across to Pedlar's-acre.

SCRAPERS AND SIGNS.—There is a subject that time after time I have intended to write to you about, hoping you would give it your influence to set it to rights. The subject is foot or shoe-scrapers: you see I do not soar very high in my cogitations. Being also a little short-sighted, my meditations on the subject lead me to bless these foot-scrapers a thousand times, the more so that I know there is a remedy for the evil. When recently in Hamburgh, I was delighted with the substitute they have there for the really inefficient, after a little use, and dangerous thing they have in this country. At each end of the door-step, and on a level with it, they have a grating, which not only is far more serviceable, but allows the dirt to fall through into a convenient space opening to the front, cut out on purpose, and which admits of its daily and easy removal. There is another subject I also think might suggest a passing observation from you. I regret it is not much more elevated than the other. I allude to sign-boards, that is, as far as they refer to the numerous large new buildings being run up in all directions for offices. Sometimes the builder leaves a narrow space for the names of the occupiers, or a board is put up for this purpose, but it is almost always so narrow that there is no room for making a separate column for designations: even when the name is long, it has to

memorials had been presented, from which he had made a selection; the first of which to be brought under notice was a memorial, complaining of the nuisance from an open sewer at Temple Bar Pier, and requesting that it might be arched over. The proprietors of the Chinese Junk had also memorialised them to the same effect. A discussion then ensued as to the propriety of covering the sewer to low-water mark, which Mr. Stephenson and Mr. Rendell recommended, Captain Dawson suggesting a special rate to defray the expense. The chairman stated that the sewer drained a whole district, and that the district rates were liable to the cost. The surveyor, he said, had reported that this was not so great a nuisance as many of the other outlets to the Thames. He was of opinion that if covered over, the expense would be thrown away as soon as the general plan of drainage was adopted. The estimate for covering over the sewer with planking would be about 150*l.* Mr. Rendell and Mr. Stephenson thought the propriety of incurring the expense would depend upon the time the nuisance would be likely to be endured. If the prospect of the adoption of the general plan was distant, it might be expedient to abate a great nuisance in the meantime. The matter was ordered to be further reported on at next court. Some other complaints were then heard and works ordered, warrants signed, and rates of 3d. in the pound on the Wandle, Fulham, and Hammersmith districts ordered.

WEST SUFFOLK ARCHÆOLOGICAL INSTITUTE.—On Thursday week, the members and friends of this society paid a visit to Ely Cathedral. The attendance consisted principally of the clergy and their families from Suffolk: there were not many members present from Cambridge. The Very Rev. the Dean, and the architect, attended the party from the nave to the lantern, and through the cathedral, explaining to the visitors every object of antiquarian and general interest, and the late improvements made in the edifice. In the afternoon the palace was thrown open, and the bishop presided at dinner.

FOXING

THE ADELPHI THEATRE.—The new drama here, called "The Queen's Secret, or the Iron Mask," has three pretty scenes,—an inn on the borders of the Forest of Fontainebleau; the Chateau of Fontainebleau (that rendezvous of palaces); and the Monastery of Lerins, in the Island of St. Honorat. The piece, founded on a well-known mysterious passage in French history, is mainly dependant on the acting of Madame Celeste and Mr. Webster, well supported, however, by Miss Woolgar and Paul Bedford. The versatility of Mr. Webster as an actor is very extraordinary: he can play anything,—from Richard III. to harlequin: the rough countryman, the West-end fop, the stern old Puritan, the Paris *flaneur*, find in him an equally efficient representative.

THE LONGEST SHIP. BEATEN AGAIN.—Under the heading "The Longest Ship in the World" our contemporaries have mentioned that Messrs. Mare, shipbuilders, of Blackwall, and Messrs. Penn, of Greenwich, engineers, have taken a contract to construct, for the Peninsular and Oriental Steam Navigation Company, an iron steam-ship, of the following dimensions and power, viz.:—Length between the perpendiculars, 325 feet; breadth of beam, 43 feet; depth, 32 feet. She will measure about 3,000 tons, and will be propelled by four engines of the collective working power of 1,200 horses; will have feathering paddle-wheels and a guaranteed average speed of 14 hour. of this th that most will be 60 feet North *frica*; such as ructing 00 feet *ledonia*, owever, ipation. ocks at undred to have eight of the largest sized boilers, and her water wheel will be 42 feet in diameter. She will be completed in the fall.

SOLID GAS.—Baron Liebig speaks of the solidification of gas as one of the greatest wants of the age. Coal does contain an immense quantity of it in a solid state, and yields abundance of it in the fluid form of naphtha; but coal may rather be said to yield the gas than even to contain it, far less to be it in a solid state. Mr. Young, of Manchester, however, is said to have discovered a process by which, besides liquid oil or naphtha, he procures the solid paraffine—a substance which, it is said, had never before been produced from coal, though wood has heretofore yielded it. This paraffine, when heated, becomes olefiant gas—the illuminating principle of ordinary gas light,—so that it is in reality the solid gas required. The essential point of cost may perhaps thus be brought within the limits of practical purposes. The process is said to be quite simple. The coal introduced at one end of a retort is screwed out in the form of coke at the other, while the liquid and solid products of distillation come away from a separate opening. If successfully carried out on a large scale, Mr. Young's process will yield important results, and among these may be specified the economical production of coke for our railways as well as of gas for our dwellings.

MODERN BALLOONING.—In lately reprobating the stupid abuses, mountebankism, and sometimes something worse, into which ballooning has fallen, we scarcely expected to be supported so soon by one of the "balloonatics" themselves, as he very significantly dubs them. A young artist, one of a party of four, whom we happened to see tumbling down into Fulham in a flimsy article, to what appeared, to themselves as well as to all who witnessed the exhibition, to be certain destruction, cleverly and coolly obviated, however, the very next moment, by one of the exhibitors, who converted the collapsing bag into a parachute by cutting away the attachments of the neck beneath,—describing the circumstances in the daily papers, says:—"I am too sensible of the mischievous folly of which I and my brother balloonatics have been guilty, to let this opportunity pass without recording my humble, but solemn protest against the whole system of ballooning as at present existing. If any beneficial result was to be looked for—if any scientific ends were to be gained by balloon ascents, I should be silent; but it is madness and folly to permit any enthusiast or any charlatan who may be the possessor of a silk bag which he can afford to fill with coal gas, to risk his own life among the clouds, as well as those of the madcaps who are with him, for the amusement of some hundreds of *gobemouches* who have paid a shilling a-head to see their fellow-creatures commit constructive suicide. When some personage more important than a poor caricaturist has been killed in a balloon, the attention of the authorities will perhaps be drawn to the subject, and this wanton trifling with life be perhaps put a stop to, like any other dangerous nuisance."

FALL OF A FLOOR AT BALLYCLARE.—The flooring of a large loft in an old paper-mill here gave way last week, while upwards of 500 persons were assembled at a lecture on "electro-biology," and three lives were lost in consequence, and twenty-six persons seriously injured. The flooring consisted of heavy 3-inch planks, running transversely to the direction of the beam, supported at one end by the side-walls where it was let into the stone-work, and at the other end by the beam, along the top of which the planks met from either side, and to which they were fastened by long iron bolts. The accident was occasioned by the breaking of the beam exactly in the centre, at a moment when a rush had been made thither to witness some experiment, and when it gave away, the flooring shelved downwards from both sides, sliding, as it were, those who stood upon it into the store below. In some places the planks prized up the masonry into which they were inserted, and in one spot a considerable mass of stone and brickwork was detached, which, falling upon the living heap below, caused the most fatal of the injuries recorded. Such cases—and this is not the first of late, even in Ireland—show the necessity of inquiry and examination as to the sufficiency of places of public resort to sustain the probable pressure under every contingency. It is the duty of local authorities even more than of lecturers to see to this.

COLOUR-BOXES AND DRAWING INSTRUMENTS.—The Council of the Society of Arts, wishing still further to prosecute their efforts in bringing a knowledge of drawing within the reach of artisans and others, and feeling convinced that the present high price of the necessary materials is a serious drawback to the attainment of that end, have determined to present the Society's large medal to the person who shall produce the box having the greatest number of the best colours for general use, and brushes, which may be sold retail for One Shilling. The Council will be prepared to purchase not less than one thousand of the successful boxes. The Council further offer the Society's large medal for the best and cheapest set of "drawing instruments," and will be prepared to purchase not less than one hundred sets of the successful case.

THE STATUE IN CAVENDISH-SQUARE TO LORD GEORGE BENTINCK.—On Saturday last, at the vestry of St. Marylebone, a report was presented from a committee appointed, as to the making of two crossings from Holles-street to the garden in the centre of Cavendish-square, that the present crossing and gate might be removed from the centre, so as not to interfere with the statue of the late Lord George Bentinck now about to be erected there,—the inhabitants of the square or parties applying for the change agreeing to pay the cost of alteration themselves. The report was adopted.

WORSLEY HALL.—An illustration of Worsley Hall, at which her Majesty means to rest on her visit to Manchester on 10th proximo, will be found in the eighth volume of THE BUILDER, page 270.

THE SUB-MARINE TELEGRAPH.—The line, as now being manufactured, is described as consisting of four copper wires of the thickness of an ordinary bellwire, cased in gutta percha, and twined with a corresponding number of hempen strands steeped in a mixture of tar and tallow into a rope of about an inch diameter. Another strand similarly prepared is wound transversely round this, and finally ten wires of galvanized iron, about a third of an inch thick, are twined round this central core and form a solid and at the same time flexible casing. The whole, when thus completed, has the appearance of an ordinary 4½-inch metallic cable. A huge coil is being formed in one continuous piece at the rate of about 1½ mile a day, and will finally attain the length of 24 miles.

THE EARTHQUAKE AT NAPLES.—An *Official Gazette* of the two Sicilies gives a detailed account of the disasters caused throughout the kingdom of Naples by the earthquake of 14th ult. The Principato Ulteriore was severely visited, particularly in the districts of Carbonara, Lacedonia, Galitri, and Monteverde. At Bovino, Ascoli, Lucera, and Sanseverio, and other places of Capitanata, most of the houses were seriously injured. In the province of Bari, the town of Canosa has suffered most: 376 houses are in a tottering condition: two churches, the town-house, and the arch of Diomedes, have been considerably damaged. But the scourge was most severely felt in the province of Basilicata, its effects being chiefly concentrated around the Vultore, where the motion lasted sixty seconds; and, according to the account, it had not quite ceased by last advices. One-half of Venosa had been destroyed. At Rionero, fifty-two dead bodies had been dug out of ruins on 16th; at Barile 100; and the town of Melfi, containing 10,000 inhabitants, is a heap of ruins: 700 persons lost their lives there, and upwards of 200 are severely bruised and wounded. The village of Barile actually disappeared. The Neapolitan government have given directions for the prompt reconstruction of the fallen houses, and advanced sums for the purpose. The houses that are in a tottering condition, but may still be saved, have been propped up: those that threaten ruin are in course of demolition. Meantime barracks have been constructed for the houseless population, and four government engineers are directing the labours now in progress for repairing the immense damage done.

THE TEMPLE CHURCH.—On going to visit the Temple Church the other day with some country friends, says the *John Bull*, we were much disappointed at finding the door closed. We now gather, however, from a correspondent of the *Morning Chronicle*, that a sort of half welcome is given after all to those who are fortunate enough to be initiated in the "Open Sesame" of this ancient abode of the Knights Templars, which consists in simply knocking at the door. It is to be regretted that the solution of the mystery of admission is not announced by a slip of paper on the door inscribed with the word "knock."

VENETIAN BLINDS.—Cast-iron is said to be coming into use for common Venetian blinds. We have sometimes thought that good, stout, tinned iron might be economically cut into slips for such blinds. The *Mechanic's Magazine* says, that a Mr. Burt makes laths of iron or metal, embossed, corrugated, or simply curved, perforated and painted or japanned, according to taste. He also claims an arrangement for raising and lowering such blinds, and preserving the parallelism of the laths, without the multiplicity of cords generally employed.

WAGES IN SOUTH AUSTRALIA.—Return showing average wages of mechanics and others in South Australia, for quarter ending 31st December, 1850.—Blacksmiths, 9s. per day, without board or lodging; bricklayers, 7s. to 7s. 6d., ditto; brickmakers, per 1,000, 10s. to 13s., ditto; carriage makers, 7s. per day, ditto; coopers, 6s. to 7s., ditto; day labourers, 4s. per day, ditto; wheelwrights, 6s. to 6s. 6d., ditto; miners, tributers, according to agreement; boys, 6d. to 1s., with board and lodging; shipwrights, 8s. to 9s. per day, without board or lodging.—*Adelaide Observer*.

ARCHITECTURAL AND OTHER NEWS IN IRELAND.

THE foundation-stone of a new town-hall was laid at Portadown last month.

A new custom-house is to be erected at Belfast, on the site now occupied by the harbour-office. The proposed building will contain offices for post-office and excise purposes.

The Commissioners of Public Works have expended, up to the present time, on the Ferbain drainage, a sum of 29,751*l.*, and a sum of 27,315*l.* is required to complete it, although the original estimate was only 47,000*l.*

The foundation-stone of a new Roman Catholic church has been laid at Ballinroke.

Sundry works, consisting of the erection of a new board-room, &c. are being executed at the workhouse of Abbeyleix, under the direction of the Poor-law Commissioners' architect.

The restoration of the cathedral of St. Canice, at Kilkenny, is progressing. The four great pillars and arches supporting the belfry tower are being re-decorated, and the whitewash with which they were covered for nearly two centuries is being removed: several other restorations are being effected.

The line between Strabane and Newtownstewart, on the Londonderry and Enniskillen Railway, is in a forward state, and the works are expected to be shortly complete.

The parish church of Grean is being enlarged, and a new church is to be erected in the parish of Doon.

A new Presbyterian church is to be built at Belfast, on the Crumlin road.

The Committee of Natural History of the Royal Dublin Society advertised "*the munificent*" premium of ten guineas to be given for the best set of plans for a building, containing extended museum accommodation, and to cost 2,500*l.* Although several designs were received by them for the same on the 1st of "May" last, no decision has been *yet* come to.

The exhibition of the Royal Hibernian Academy at Dublin has been open since July. The collection of paintings is far inferior in number to the preceding years. In the antique room the display of sculpture is greatly improved. The architectural drawings are extremely limited, and display few of any importance. The exhibition is now open to the working classes at the reduced rate of one penny.

PALACES AND PARKS OPEN TO THE PARISIAN PUBLIC.

WE compile the following list from one given in the French journals, assenting at the same time to the belief that there is no other city in Europe so well provided with places for public amusement, recreation, and instruction,—terms which are nearly synonymous, or ought to be so.

Fontainebleau.—Palace built by Primaticc, and the successive abode of Francis I., Henry IV., Louis XIV., Napoleon, &c.; possesses a gallery, park, &c.

Compiegne.—Palace built by Francis I., furnished by Napoleon. Great *bercean* in the park.

Auteuil.—Once inhabited by Racine, Molière, Franklin, Helvætius, &c.

Chantilly.—Palace, park, theatre, &c.

La Malmaison.—Inhabited by Napoleon and Josephine, who established here hot-houses, celebrated in their time. It was here that our favourite *Hortensia* plants were first cultivated.

Marly.—Palace and park of Louis XIV. Famous water-works, where 225 sucking and forcing pumps reach the river and raise the water 167 mètres above its level: aqueduct 1,000 mètres long, leading the water to the Versailles water-works. Steam-pump raising the water 500 mètres.

Mais n-sur-Seine.—Built by Mansard, with a collection of curiosities of the times of Charles IX. It belonged successively to Napoleon, Lannes, and Lafitte, the latter of whom converted the park into a *village-modèle* (model village for the working classes). Distance, twenty-five minutes from Paris.

Montmorency.—The finest forest-park near Paris. J. J. Rousseau lived and wrote here.

Meudon.—Palace built by Philibert de Lormes, renovated by Louis XIV. Immense terrace on the Seine, whence Paris and 186 villages are to be seen. Rabelais was parson of Meudon.

Saint Cloud.—Palace and park. Henry III. died here by the dagger of a monk. The palace is rich in art-works, the park most picturesque.

Sèvres.—Great manufactory of porcelain.

Versailles.—World-known; perhaps the finest *ensemble* of architecture and *parking* in the known world. The two smaller palaces of Trianon.

Sceaux.—The garden of the ancient chateau built by Colbert.

Saint Germain.—Ruins of the *Château Neuf*, built by Henry IV.: James II. of England died there; since Louis le Gros the abode of thirty kings and queens of divers names. The ancient buildings are interesting specimens of the art-style of six centuries.

Le Mont Valérien.—One of the oldest sites of Paris, probably built on before the Christian Era.

Rembouillet.—The ancient château with its fine high tower: here died Francis I.: park and gardens laid out by Le Nôtre.

Neuilly.—Ruins of the Orleans palaces, &c.

Miscellanea.

CASTING IRON PIPES.—The *Glasgow Mail* notices the mode of casting pipes in use at the foundry of Messrs. D. Y. Stewart and Co. of St. Rollox. The writer says that the foundry turns out twenty pipes in a day, each 12 feet long and 44 inches bore. With the exception of drying, the whole process of moulding and casting is gone through in half an hour. The malleable iron case, on its railway carriage, is placed under the moulding machine: the pipe is completely moulded in a period of three minutes—the faucet formed, and the running number impressed: the whole is then transferred to the hot air stove, thence carried round to the cupola, where the core is inserted, and the molten metal, at a delicately determined degree of temperature, is introduced from an enormous cauldron, suspended from a powerful crane. While the metal is being poured in, myriads of the most brilliant and fantastic scintillations are often evolved. Immediately afterwards, and at the critical moment of incipient contraction and setting of the metal, the core is started by means of a hydraulic press, and the huge tube, every part of which is of equal thickness and strength, is carried away and deposited in the yard for cooling, dressing, and testing. Some portion of the process—the writer does not state what—is the invention of the managing partner.

MATERIALS OF OLD HOUSE OF COMMONS.—Messrs. Eversfield and Horne, as will have been seen from the daily newspapers, have had the selling of the materials and fittings of the old House of Commons, the Painted Chamber, &c. The whole product was 1,782*l.* It may be of interest to note a few of the particulars. The Portland stone, ashlar, cornice, string course, dressings, &c., of the building, corner of St. Margaret-street, up to a mark, including two windows with Ionic columns, brought 39*l.* The copper flat, 850 feet superficial, in the offices facing Old Palace-yard, 42*l.* The open panel ceiling of the House of Commons, 11*l.* The wainscot canopy for the Speaker's chair, 10*l.* The brick and stone-work of the north side and ends of the Painted Chamber and arches under, including several ancient Gothic stone windows, 50*l.*

THE WESTMINSTER-BRIDGE-ROAD.—The dangerous state of the carriage-way near the foot of Westminster-bridge, on the Surrey side, occasioned by the breaking in of an old sewer, a few weeks since, has been made good. The loose soil has been withdrawn, and the aperture filled in with rubbish and concrete. The course of the drain has been diverted, so as to form a junction with the recently-constructed sewer which intersects the Westminster-road from Stangate-street across to Pedlar's-acre.

SCRAPERS AND SIGNS.—There is a subject that time after time I have intended to write to you about, hoping you would give it your influence to set it to rights. The subject is foot or shoe-scrapers: you see I do not soar very high in my cogitations. Being also a little short-sighted, my meditations on the subject lead me to bless these foot-scrapers a thousand times, the more so that I know there is a remedy for the evil. When recently in Hamburgh, I was delighted with the substitute they have there for the really inefficient, after a little use, and dangerous thing they have in this country. At each end of the door-step, and on a level with it, they have a grating, which not only is far more serviceable, but allows the dirt to fall through into a convenient space opening to the front, cut out on purpose, and which admits of its daily and easy removal. There is another subject I also think might suggest a passing observation from you. I regret it is not much more elevated than the other. I allude to sign-boards, that is, as far as they refer to the numerous large new buildings being run up in all directions for offices. Sometimes the builder leaves a narrow space for the names of the occupiers, or a board is put up for this purpose, but it is almost always so narrow that there is no room for making a separate column for designations: even when the name is long, it has to occupy two lines. Now we keep our books as much as possible on the column principle, to save time and trouble, and I do not see why it should not be the same with signs or sign-boards. Names and designations are often so jumbled together in a long list, that it is difficult and time-occupying to find out a required address. This, however, is a small matter compared to the foot-scrapers: I do hope you will give them a kick off the face of the earth.—A LIVERPOOLIAN.

METROPOLITAN COMMISSION OF SEWERS.—A special court was held on Friday, in last week; Mr. E. Lawes in the chair, and Mr. R. Stephenson, Captain Dawson, and Mr. Rendell, commissioners, also present. The chairman stated, that a great number of applications and memorials had been presented, from which he had made a selection; the first of which to be brought under notice was a memorial, complaining of the nuisance from an open sewer at Temple Bar Pier, and requesting that it might be arched over. The proprietors of the Chinese Junk had also memorialised them to the same effect. A discussion then ensued as to the propriety of covering the sewer to low-water mark, which Mr. Stephenson and Mr. Rendell recommended, Captain Dawson suggesting a special rate to defray the expense. The chairman stated that the sewer drained a whole district, and that the district rates were liable to the cost. The surveyor, he said, had reported that this was not so great a nuisance as many of the other outlets to the Thames. He was of opinion that if covered over, the expense would be thrown away as soon as the general plan of drainage was adopted. The estimate for covering over the sewer with planking would be about 450*l.* Mr. Rendell and Mr. Stephenson thought the propriety of incurring the expense would depend upon the time the nuisance would be likely to be endured. If the prospect of the adoption of the general plan was distant, it might be expedient to abate a great nuisance in the meantime. The matter was ordered to be further reported on at next court. Some other complaints were then heard and works ordered, warrants signed, and rates of 3d. in the pound on the Wandle, Fulham, and Hammersmith districts ordered.

WEST SUFFOLK ARCHÆOLOGICAL INSTITUTE.—On Thursday week, the members and friends of this society paid a visit to Ely Cathedral. The attendance consisted principally of the clergy and their families from Suffolk: there were not many members present from Cambridge. The Very Rev. the Dean, and the architect, attended the party from the nave to the lantern, and through the cathedral, explaining to the visitors every object of antiquarian and general interest, and the late improvements made in the edifice. In the afternoon the palace was thrown open, and the bishop presided at dinner.

The Adelphi Theatre.—The new drama here, called "The Queen's Secret, or the Iron Mask," has three pretty scenes,—an inn on the borders of the Forest of Fontainebleau; the Chateau of Fontainebleau (that rendezvous of palaces); and the Monastery of Lerins, in the Island of St. Honorat. The piece, founded on a well-known mysterious passage in French history, is mainly dependant on the acting of Madame Celeste and Mr. Webster, well supported, however, by Miss Woolgar and Paul Bedford. The versatility of Mr. Webster as an actor is very extraordinary: he can play anything,—from Richard III. to harlequin; the rough countryman, the West-end fop, the stern old Puritan, the Paris *flaneur*, find in him an equally efficient representative.

The Longest Ship. Beaten again.—Under the heading "The Longest Ship in the World" our contemporaries have mentioned that Messrs. Mare, shipbuilders, of Blackwall, and Messrs. Penn, of Greenwich, engineers, have taken a contract to construct, for the Peninsular and Oriental Steam Navigation Company, an iron steam-ship, of the following dimensions and power, viz.:—Length between the perpendiculars, 325 feet; breadth of beam, 43 feet; depth, 32 feet. She will measure about 3,000 tons, and will be propelled by four engines of the collective working power of 1,200 horses; will have feathering paddle-wheels, and a guaranteed average speed of 14 knots, equal to 16 statute miles per hour. Some idea may be formed of the size of this gigantic vessel when it is compared with that of some of the existing steam-ships most celebrated for their large size. She will be 51 feet longer than the *Great Britain*; 60 feet longer than the largest of the Cunard or North American mail steamers, the *Asia* and *Africa*; 40 feet longer than the large steamers, such as the *Panama, Oronoco*, &c., now constructing for the Royal Mail Company; and 100 feet longer, and 500 tons larger, than the *Caledonia*, first-rate, of 120 guns. Strange to say, however, the Americans have beaten this by anticipation. The steamer *Eclipse*, now on the stocks at Louisville, Kentucky, is to be three hundred and *fifty-nine* feet in length. She is to have eight of the largest sized boilers, and her water wheel will be 42 feet in diameter. She will be completed in the fall.

Solid Gas.—Baron Liebig speaks of the solidification of gas as one of the greatest wants of the age. Coal does contain an immense quantity of it in a solid state, and yields abundance of it in the fluid form of naphtha; but coal may rather be said to yield the gas than even to contain it, far less to be it in a solid state. Mr. Young, of Manchester, however, is said to have discovered a process by which, besides liquid oil or naphtha, he procures the solid paraffine—a substance which, it is said, had never before been produced from coal, though wood has heretofore yielded it. This paraffine, when heated, becomes olefiant gas—the illuminating principle of ordinary gas light,—so that it is in reality the solid gas required. The essential point of cost may perhaps thus be brought within the limits of practical purposes. The process is said to be quite simple. The coal introduced at one end of a retort is screwed out in the form of coke at the other, while the liquid and solid products of distillation come away from a separate opening. If successfully carried out on a large scale, Mr. Young's process will yield important results, and among these may be specified the economical production of coke for our railways as well as of gas for our dwellings.

Modern Ballooning.—In lately reprobating the stupid abuses, mountebankism, and sometimes something worse, into which ballooning has fallen, we scarcely expected to be supported so soon by one of the "balloonatics" themselves, as he very significantly dubs them. A young artist, one of a party of four, whom we happened to see tumbling down into Fulham in a flimsy article, to what appeared, to themselves as well as to all who witnessed the exhibition, to be certain destruction, cleverly and coolly obviated, however, the very next moment, by one of the exhibitors, who converted the collapsing bag into a parachute by cutting away the attachments of the neck beneath,—describing the circumstances in the daily papers, says:—"I am too sensible of the mischievous folly of which I and my brother balloonatics have been guilty, to let this opportunity pass without recording my humble, but solemn protest against the whole system of ballooning as at present existing. If any beneficial result was to be looked for—if any scientific ends were to be gained by balloon ascents, I should be silent; but it is madness and folly to permit any enthusiast or any charlatan who may be the possessor of a silk bag which he can afford to fill with coal gas, to risk his own life among the clouds, as well as those of the madcaps who are with him, for the amusement of some hundreds of *gobemouches* who have paid a shilling a-head to see their fellow-creatures commit constructive suicide. When some personage more important than a poor caricaturist has been killed in a balloon, the attention of the authorities will perhaps be drawn to the subject, and this wanton trifling with life be perhaps put a stop to, like any other dangerous nuisance."

Fall of a Floor at Ballyclare.—The flooring of a large loft in an old paper-mill here gave way last week, while upwards of 500 persons were assembled at a lecture on "electro-biology," and three lives were lost in consequence, and twenty-six persons seriously injured. The flooring consisted of heavy 3-inch planks, running transversely to the direction of the beam, supported at one end by the side-walls where it was let into the stone-work, and at the other end by the beam, along the top of which the planks met from either side, and to which they were fastened by long iron bolts. The accident was occasioned by the breaking of the beam exactly in the centre, at a moment when a rush had been made thither to witness some experiment, and when it gave away, the flooring shelved downwards from both sides, sliding, as it were, those who stood upon it into the store below. In some places the planks prized up the masonry into which they were inserted, and in one spot a considerable mass of stone and brickwork was detached, which, falling upon the living heap below, caused the most fatal of the injuries recorded. Such cases—and this is not the first of late, even in Ireland—show the necessity of inquiry and examination as to the sufficiency of places of public resort to sustain the probable pressure under every contingency. It is the duty of local authorities even more than of lecturers to see to this.

Colour-Boxes and Drawing Instruments.—The Council of the Society of Arts, wishing still further to prosecute their efforts in bringing a knowledge of drawing within the reach of artisans and others, and feeling convinced that the present high price of the necessary materials is a serious drawback to the attainment of that end, have determined to present the Society's large medal to the person who shall produce the box having the greatest number of the best colours for general use, and brushes, which may be sold retail for One Shilling. The Council will be prepared to purchase not less than one thousand of the successful boxes. The Council further offer the Society's large medal for the best and cheapest set of "drawing instruments," and will be prepared to purchase not less than one hundred sets of the successful case.

The Statue in Cavendish-square to Lord George Bentinck.—On Saturday last, at the vestry of St. Marylebone, a report was presented from a committee appointed, as to the making of two crossings from Holles-street to the garden in the centre of Cavendish-square, that the present crossing and gate might be removed from the centre, so as not to interfere with the statue of the late Lord George Bentinck now about to be erected there,—the inhabitants of the square or parties applying for the change agreeing to pay the cost of alteration themselves. The report was adopted.

Worsley Hall.—An illustration of Worsley Hall, at which her Majesty means to rest on her visit to Manchester on 10th proximo, will be found in the eighth volume of The Builder, page 270.

The Sub-Marine Telegraph.—The line, as now being manufactured, is described as consisting of four copper wires of the thickness of an ordinary bellwire, cased in gutta percha, and twined with a corresponding number of hempen strands steeped in a mixture of tar and tallow into a rope of about an inch diameter. Another strand similarly prepared is wound transversely round this, and finally ten wires of galvanized iron, about a third of an inch thick, are twined round this central core and form a solid and at the same time flexible casing. The whole, when thus completed, has the appearance of an ordinary 4½-inch metallic cable. A huge coil is being formed in one continuous piece at the rate of about 1½ mile a day, and will finally attain the length of 24 miles.

The Earthquake at Naples.—An *Official Gazette* of the two Sicilies gives a detailed account of the disasters caused throughout the kingdom of Naples by the earthquake of 14th ult. The Principato Ulteriore was severely visited, particularly in the districts of Carbonara, Lacedonia, Galitri, and Monteverde. At Bovino, Ascoli, Lucera, and Sanseverio, and other places of Capitanata, most of the houses were seriously injured. In the province of Bari, the town of Canosa has suffered most: 376 houses are in a tottering condition: two churches, the town-house, and the arch of Diomedes, have been considerably damaged. But the scourge was most severely felt in the province of Basilicata, its effects being chiefly concentrated around the Vultore, where the motion lasted sixty seconds; and, according to the account, it had not quite ceased by last advices. One-half of Venosa had been destroyed. At Rionero, fifty-two dead bodies had been dug out of ruins on 16th; at Barile 100; and the town of Melfi, containing 10,000 inhabitants, is a heap of ruins: 700 persons lost their lives there, and upwards of 200 are severely bruised and wounded. The village of Barile actually disappeared. The Neapolitan government have given directions for the prompt reconstruction of the fallen houses, and advanced sums for the purpose. The houses that are in a tottering condition, but may still be saved, have been propped up: those that threaten ruin are in course of demolition. Meantime barracks have been constructed for the houseless population, and four government engineers are directing the labours now in progress for repairing the immense damage done.

The Temple Church.—On going to visit the Temple Church the other day with some country friends, says the *John Bull*, we were much disappointed at finding the door closed. We now gather, however, from a correspondent of the *Morning Chronicle*, that a sort of half welcome is given after all to those who are fortunate enough to be initiated in the "Open Sesame" of this ancient abode of the Knights Templars, which consists in simply knocking at the door. It is to be regretted that the solution of the mystery of admission is not announced by a slip of paper on the door inscribed with the word "knock."

Venetian Blinds.—Cast-iron is said to be coming into use for common Venetian blinds. We have sometimes thought that good, stout, tinned iron might be economically cut into slips for such blinds. The *Mechanic's Magazine* says, that a Mr. Burt makes laths of iron or metal, embossed, corrugated, or simply curved, perforated and painted or japanned, according to taste. He also claims an arrangement for raising and lowering such blinds, and preserving the parallelism of the laths, without the multiplicity of cords generally employed.

Wages in South Australia.—Return showing average wages of mechanics and others in South Australia, for quarter ending 31st December, 1850.—Blacksmiths, 9s. per day, without board or lodging; bricklayers, 7s. to 7s. 6d., ditto; brickmakers, per 1,000, 10s. to 13s., ditto; carriage makers, 7s. per day, ditto; coopers, 6s. to 7s., ditto; day labourers, 4s. per day, ditto; wheelwrights, 6s. to 6s. 6d., ditto; miners, tributers, according to agreement; boys, 6d. to 1s., with board and lodging; shipwrights, 8s. to 9s. per day, without board or lodging.—*Adelaide Observer.*

Ivy on Exterior Walls.—The last thing I have to mention on the subject of damp relates to ivy on exterior walls of buildings, which may be said to belong more to the consideration of the architect than to my purpose; but as precaution is allowed to be better than cure, I trust it will not be thought irrelevant to notice its effect on external walls, which is, that if it does not entirely eradicate damp, it may be admitted to be a repellent placed on the exterior. I had my attention drawn to a case of this description, where damp had prevailed for a length of time in the walls of an apartment, but ivy having grown up to cover the opposite exterior side, the affected parts inside had become dry. The gentleman in whose house I observed the improved change accounted for it, I think, with much reason, namely, that the close overhanging pendant leaves prevented the rain or moisture from penetrating to the wall, contrary to all other trees which are trained for bearing fruit.—*The Paperhanger's and Upholsterer's Guide.*

Management of the Woods and Forests.—On the 10th October the new Act will come into force. Its object is to separate the management of the Woods and Forests from the direction of her Majesty's Works and the Public Buildings, and to make better provision for the management of same. The First Commissioner of Woods, &c. is to be First Commissioner of Public Works and Buildings, with a salary not exceeding 2,000*l.* a-year, and he may be a member of the House of Commons. The other commissioners of Woods and Forests are to continue to hold office, but not to be eligible to a seat in the Commons. The other officers to continue in their situations. Officers may be appointed to assist in the Public Works and Buildings. The management of royal parks is to vest in the Commissioner of Works. The First Commissioner of Public Works is to be an enclosure commissioner, a commissioner of Greenwich Hospital, and of Highland roads and bridges,—a commissioner for building new churches, and president of the Board of Health.

Norfolk and Norwich Archæological Society.—The general annual meeting of members was held at Swaffham. The proceedings extended over three days. The first day commenced with the general meeting of the members in the Assembly-rooms in the morning, and an excursion to Castleacre in the afternoon; the evening being occupied with a conversazione. The two following days were devoted to excursions in the neighbourhood, particularly to Narburgh, Oxburgh, and Middleton. The meeting was fully attended, and a great many ladies were present.

Lincolnshire Architectural Society.—The autumnal meeting of this society was holden at Spalding, on Wednesday, the 10th inst., Sir Chas. Anderson, Bart., High Sheriff, in the chair. Papers were read on various subjects by the Rev. W. Moore, D.D., the Rev. Geo. Ayliffe Poole, and Dr. Cammack. The society visited several of the neighbouring churches on the two following days. At the general meeting the Rev. Geo. Ayliffe Poole, M.A., and Mr. Geo. Gordon Place, architect, were elected honorary members of the society.

The Present System of Builders Tendering.—Sir,—With reference to the great disparagement in builders' estimates, these must arise from the following difficulties. First, badly drawn specifications, and vagueness in their description, leaving builders to exercise their speculative imagination as to the architect's intentions. Secondly, the time allowed being rarely sufficient for correct estimates. Thirdly, the next a greater evil practised by builders themselves, jumping at estimates by the "rack of the eye and twist of the mouth." This abominable system is adopted by incompetent builders, and is alike disgraceful to tenderer and receiver, and only adopted by "horse dealers and *sharpers*" at our public fairs. Fourthly, builders habitually carrying into effect their dishonest policy of what is termed "spoiling it" for another opponent. Is not the above system detrimental to the builder's family and creditors? Proprietors may boast of their cheap erections, but has architect, merchant, builder, or mechanic benefited by this cheapness? It is poor consolation for a builder after a life of drudgery and toil, living like a pauper on diseased potatoes, rusty bacon, and bad cheese, gaining only the paltry gratification of seeing his name in your journal as the successful competitor for Mr. So-and-So's building and alteration.—Candidus.

The Disc Engine for Steam Boats.—Our readers may remember our description, some time since, of the patent disc-engine put up by Mr. Bishopp in *The Times* office. Messrs. Rennie have just now completed an engine on the same principle to drive a screw-propeller, in which some of the parts have been considerably simplified. The slips or grooves introduced in the first instance to make the cone steam-tight, have been got rid of with considerable advantage as respects noise and friction.

Monument to O'Connell.—It is stated that Mr. G. Petrie has designed a monument to be placed over the remains of Daniel O'Connell, in Glasnevin cemetery. The monument is to consist of a church on the ancient Irish model, a round tower, and an Irish stone cross of the most ancient form and character, and of the largest proportion. The material is to be the fine grained granite of Ireland.

North London Artisans' School of Design.—The committee have decided on appointing Mr. James K. Colling as master of geometrical drawing. There were altogether 8 candidates. We are glad to hear that H.R.H. Prince Albert has renewed his liberal subscription of 25*l.* to the funds of this Institution, which, however, are still not so large as they should be, considering the importance of its objects.

Birmingham School of Design.—We are glad to hear that Mr. Wallis has been appointed master of the school of design at Birmingham.

True Art: Loss through ignorance of it in Building.—We might perhaps be led to disregard the fact, that the knowledge of true Art is still discordant with the character of a people of high civilization, and the conviction and perception of its real beauties is as much a blank as would be the absence of a sense. The pursuit of Archæology is popular, graphic illustrations of buildings are widely disseminated, the ready use of the pencil is not confined to architects; but still, the power to recognise the beauties of Art in architecture, and the feeling of the important "mission" of Art universal, have no real existence. The want of any national recognition of the high educational value, and of the humanising and purifying influence of that Art,—the ignorance of this value, and of everything that relates to Art, and especially what relates to Architecture, displayed in Parliament whenever these matters are touched upon, is most melancholy to those who believe in something which transcends even that "mercantile value," which we are slowly appreciating,—a value infinite and pervading, and beyond what is dreamed of in all the philosophy of Oxford and Cambridge.—*From the Architectural Quarterly Review, June*, 1851.

"The Largest Hotel in the World."—I went first to the St. Charles Hotel, at New Orleans. The front consists of a huge granite portico, ascended by a flight of steps on each side, and supported on large granite columns. In the centre of the building a cupola rises, surmounted by a flag-staff. The building itself consists of five large wings diverging from the centre, one on each side of portico, parallel to the street, and the other three extending backwards, equidistant; each of these masses of building is uniform, and about four stories high. In this hotel they can make up from a thousand to eleven hundred beds, and during the season, the average number of occupants is about 700. The dining-room is an apartment with four rows of tables, capable of dining 1,500 people. On entering the portico, the visitor finds himself in a large hall, which occupies the whole of the first floor of the centre of the building, and is filled with chairs and tables, well supplied with newspapers and pamphlets. The side opposite the entrance is occupied by the bar, fitted up with plate glass, and all the necessary requisites. At the back of the bar is a large board covered with hooks, each numbered from one up to five or six hundred: these hooks are for the keys of the various rooms, which are always in the possession of the parties occupying them, unless they choose to have them hung up on the board, when they go out anywhere. In the hall were seated a number of men-servants, whose business it is to watch a large board, on which are hung innumerable bobs of brass (in six or eight parallel lines, each terminated by a bell), under as many numbers, and which, by their shaking, indicate the number of the room where the party is requiring attendance.—Of course, from the great number of lodgers, these bobs are going incessantly. At smaller hotels, where they have not servants constantly watching the bells, the barman pulls at a handle which communicates with a triangle hung somewhere outside, and by certain combinations of blows, indicates the number of the floor, and the room of that floor, where attendance is required. The ground-floor of the portico of the St. Charles is occupied by another bar for general customers, the entrance leading into the street. Under the portico in this hall are two or three shops.—*A Ramble from Sydney to Southampton.*

TENDERS

For an Elizabethan villa residence and offices (woodcrofts), to be built near Cushfield, Sussex, for Mr. Charles Lennox Peel. Mr. J. B. Watson, architect.

Davey, Lewes	£3,100 0 0
Holland, London	2,539 0 0
Higgs, ditto	2,525 0 0
Carr, ditto	2,483 10 0
Wilkinson, ditto (accepted)	2,351 0 0

For rebuilding stabling, &c., at the Greyhound-yard, Holborn, for the Holborn Estate Charity. Messrs Cadogan, architects.

Cubitt and Co.	£1,785 0 0
Hayward and Nixon	1,779 0 0
Kelk	1,770 0 0
Macey	1,647 0 0
Nex	1,592 0 0
Lawrence and Sons	1,492 0 0
Chesterman and Son	1,468 0 0

TO CORRESPONDENTS.

"E. W. T." (can scarcely have given the least consideration to what was actually said in the review referred to, otherwise he would not have jumped to so erroneous a conclusion as that "the truth" of "the law of gravitation" was "doubted," or questioned either by the reviewer or by Dr. Nichol, the Professor of Astronomy at Glasgow, who is quoted as an authority for the opinion of the *insufficiency* of that law *to explain certain important facts or phenomena* in the solar system), "O.," "J. W.," "G. R. P." (the subject has been often advocated in our pages), "A Builder," "J. B. W." (shall hear from us), "W. and Sons," "Zeta" (declined with thanks), "Messrs. B. and Co." (appear to have overlooked what has been already said), "G. G.," "T. W.," "A. B. C.," "P. S.," "M. P.," "C. H." (nothing yet from Italy), "Scotia" (address the parties), "R. L. S.," "G. H. C.," "J. B." Norwich, "K. and T." (apply to the manufacturers), "A Student" (there is, fortunately, no such offer. Do not waste your time upon a shadow).

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the Editor, and *not* to the Publisher.

ADVERTISEMENTS.

BUILDERS' BENEVOLENT INSTITUTION.—FOURTH ANNIVERSARY DINNER, to be held at the London Tavern, on WEDNESDAY, October 29, 1851.

THOMAS GRISSELL, Esq., F.S.A., President, in the Chair.

Stewards.

Stephen Bird, Esq.	H. W. Cooper, Esq.	G. John Newson, Esq.
George Bird, Esq.	William Edwin, Esq.	J. Peto, Esq.
Joseph Bird, Esq.	E. B. Gammon, Esq.	Wm. Norris, Esq.
Alderman William Cubitt, M.P.	Wm. Harding, Esq.	Thos. Patrick, Esq.
	George Hovil, Esq.	Rd. Richardson, Esq.
Robt. J. Curtis, Esq.	J. R. Helling, Esq.	G. S. Smith, Esq.
Messrs. Collins and Salisbury, Birmingham.	Wm. Herbert, Esq.	J. Soward, Jun., Esq.
	Wm. Hutchons, Esq.	Thos. Stirling, Esq.
Charles Baker, Esq.	Thos. Howard, Esq.	John Thorn, Esq.
N. Barnes, Esq.	Thos. Hookey, Esq.	Isaac Unwin, Esq.
Thomas Cozens, Esq.	James Knight, Esq.	R. Watts, Jun., Esq.
	George Myers, Esq.	

Gentlemen desirous of promoting the interests of the Institution by becoming Stewards will be pleased to forward their names to the Secretary, at the office, 4a, New Oxford-street.

A. G. HARRIS, Secretary.

MERCANTILE EDUCATION, French, German, English, Classical, Commercial, and Mathematical, near town. Terms, Six Guineas per quarter, which will include dancing, drawing, and books. The school is of established repute, having been for many years successfully conducted by the principal, with whom it originated.—Apply (if by letter, pre-paid) to the Rev. A. B., Baltic Coffee-house, Threadneedle-street, City.

ALTAR and COMMUNION CLOTHS, ECCLESIASTICAL CARPETS, CHURCH DECORATIONS, ROBES, &c.—HARRISON, 21, Brownlow-street, Bedford-row, London.—Decorations from the most simple to the most elaborate designs, at moderate prices.